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Broadway Railroad.

Judging from the multiplicity of communications received by us relative to elevated railroads for Broadway, we should think there were in some quarters a lively appreciation of the advantage to be derived from the accomplishment of such a scheme. The subject is to us becoming somewhat *dry*, but we perceive that the company holding the grant from the Common Council, for a railroad on the level of the street, are not going to give it up, although an injunction has been pronounced upon them, by the Supreme Court. They are now endeavoring to carry out their purpose by an organization under the general railroad law. The Harlem Company are endeavoring to anticipate them by a road through Crosby, (a street adjoining and parallel with Broadway.) We have received so many communications on this subject, that we are obliged to decline publis ing any of them.

The "Great Republic."

The mammoth clipper, "Great Republic" arrived in our harbor last week. As she was brought in alongside of some of our first class vessels, they seemed dwindled to the size ot sloops. The model and construction do credit to her builder. If she should have favorable winds on her first trip, we should not be surprised to see her making extraordinary time. She has on board a steam engine for loading and discharging cargo, hoisting sails, pumping, &c., and the long boat is fitted with a propeller, so that in time of need, the engine can be placed on board of it, and save the crew from labor at the oars.

The cabins are fitted up in superb style, equal to our ocean steamers; there are accommodations in them for about fifty passengers. Her registered tonnage is 4,500 tons, not 4,000 tons, as stated a few weeks since.

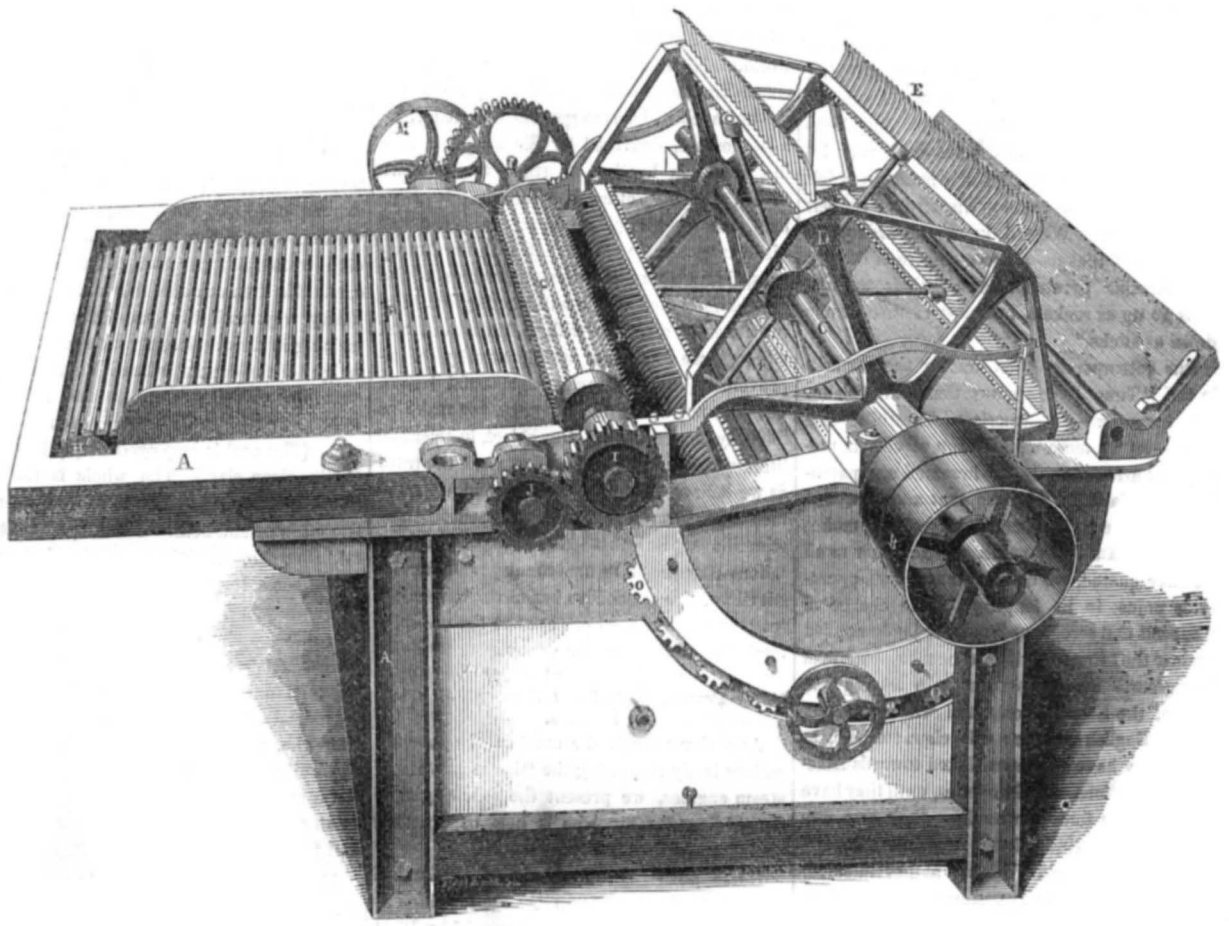
Steamer Prize Model.

The Commissioners of Birkenhead, England, have announced a premium of £100, for the best model of an iron steamboat for a ferry. The steamer to be constructed to steer from both ends, and must not exceed 130 feet in length over all, and her extreme draught of water, with engines, &c., on board, must not exceed 5 feet 6 inches. The points chiefly to be regarded by the modellers will be the strength and speed of the vessel, the convenience of the passengers, as far as it can be secured, in all weathers, the carrying capacity of the boat, which must not be less than 600 passengers, according to the measurement laid down by the Board of Trade—viz., three square feet clear deck space to each.

Professor Agassiz has relinquished his connection with the Charleston College in South Carolina, and is now engaged for twenty weeks annually in the service of the Massachusetts Board of Education.

The manufacture of portable iron edifices is progressing in Belgium. A church of cast-iron is being constructed at Charleroi, which will be removed to Cairo, the place for which it is destined, as soon as completed.

KELLOGG'S PATENT WOOL PICKER.



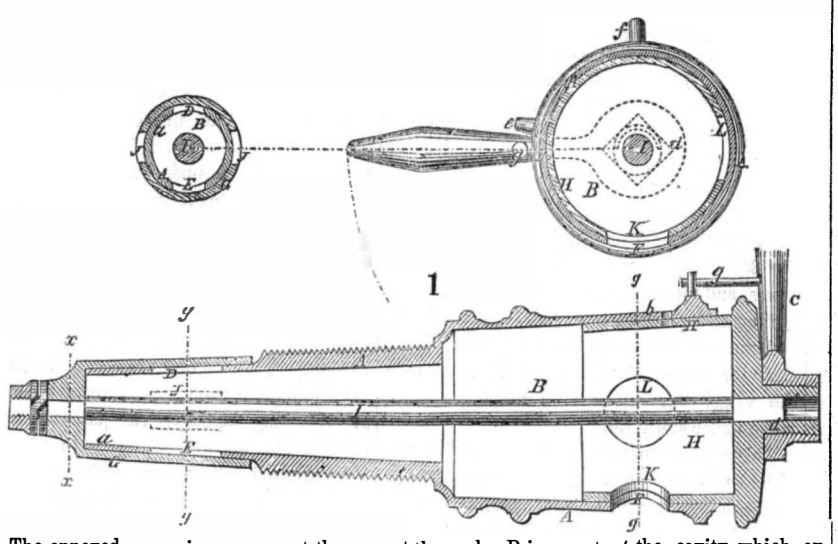
The annexed engraving is a perspective view of Kellogg's Wool and Cotton Picker, which is on exhibition at the Crystal Palace. As will be seen, it differs materially from any other in use. A is the frame of the machine; B is a fast and loose pulley on C, the principle shaft of the machine, this pulley derives its motion from the propelling power; D is one of the arms on the shaft, C, to which are secured the hooked teeth, E E; F is one of a series of plain iron rollers, in the bottom of the frame, upon the ends of which are the pinions, O O, one-half of the rollers having pinions at one side of the frame and the alternate rollers having pinions at the opposite side of the frame; G is one of two hooked feed rollers, and H is the endless platform, on which the wool is fed in; I is a wheel upon the end of the lower feed roller gearing with J, a pinion on the end of the shaft propelling the endless apron; K is a wheel on the shaft of G, which is propelled by the driver, L, on the same shaft with J; M is a pulley which takes its motion from a small one on the end of C; N is a pulley receiving its motion from one by the side of J, and communicating motion to the pinions, O O. The upper feed roller has its bearings in the crooked levers shown in the engraving, to the opposite ends of which weights are attached, so that when the feed rollers are likely to become choked, the upper one may rise and thus relieve them.

When the machine is in operation, the wool or cotton is laid on the feeding platform, A; it is by this carried between the rollers which, having an unequal motion, tear it apart, and it is then taken from them by the hooked teeth, E E. As it is carried downward by them it falls upon the plain rollers at F, and these having a motion in opposite directions, the dirt is shaken through them, while the wool is carried to the other end of the machine, whence it is taken away by an attendant. We can recommend it as a durable and efficient implement.

Furt er information can be obtained from E. Kellogg & Co., Pine Meadows, Conn., or of their agents, Andrews & Jessup, 70 Pine street, New York.

SELF-MEASURING SAFETY FAUCET.

FIGURE 2. FIGURE 3.



The annexed engravings represent three sectional views of an improved faucet, on which J. B. Larwell and J. Cross have applied for a patent. Figure 1 is a longitudinal section; figure 2 is a cross section through the line, *y y*, and figure 3 is a cross section through *g g*. A is the portion of the faucet which screws into the cask; B is a part of the cavity which extends throughout the whole length of the faucet, and is made of a given capacity, say one pint; C is the handle, having in it the pin, *g*, which serves as a stop, this handle is screwed firmly on the part, *d*, of the faucet, which moves wit it, as does also the rod, I, this rod being square where it fits into *d*. This rod is attached in a similar manner to the other extremity of the part G. Now if it is wished to use this as a measuring faucet, t e handle is set on between the pins, *e f*, figure 3. It is then so arranged that when it is turned, so that the apertures, K F, will be opposite each other, by means of the rod, I, the apertures at the other end of the faucet, which admit the liquid into the cavity, will close, so that an amount of liquor equal to the capacity of the faucet, will be discharged, and no more; if the handle be then turned back, the aperture, E, will close, and the others open, so that the faucet will be filled. But if it be wished to use this as a constant faucet to empty the barrel, the position of the handle, andthe part *d* H, of the faucet, is changed upon the rod, by placing the handle as seen in figure 3, and a constant stream is the result.

The advantages of this faucet are sufficienlty obvious. It affords a quick mode of measuring liquids. It prevents the waste of liquids by the carelessness ot attendants in leaving the faucet open. It prevents flame from being communicated to the interior of the barrel or cask in the case of combustible liquids. It is certainly a very ingenious and useful invention. For further information apply to the assignee, J. B. Larwell, Esq., Bucyrus, Crawford Co., Ohio.

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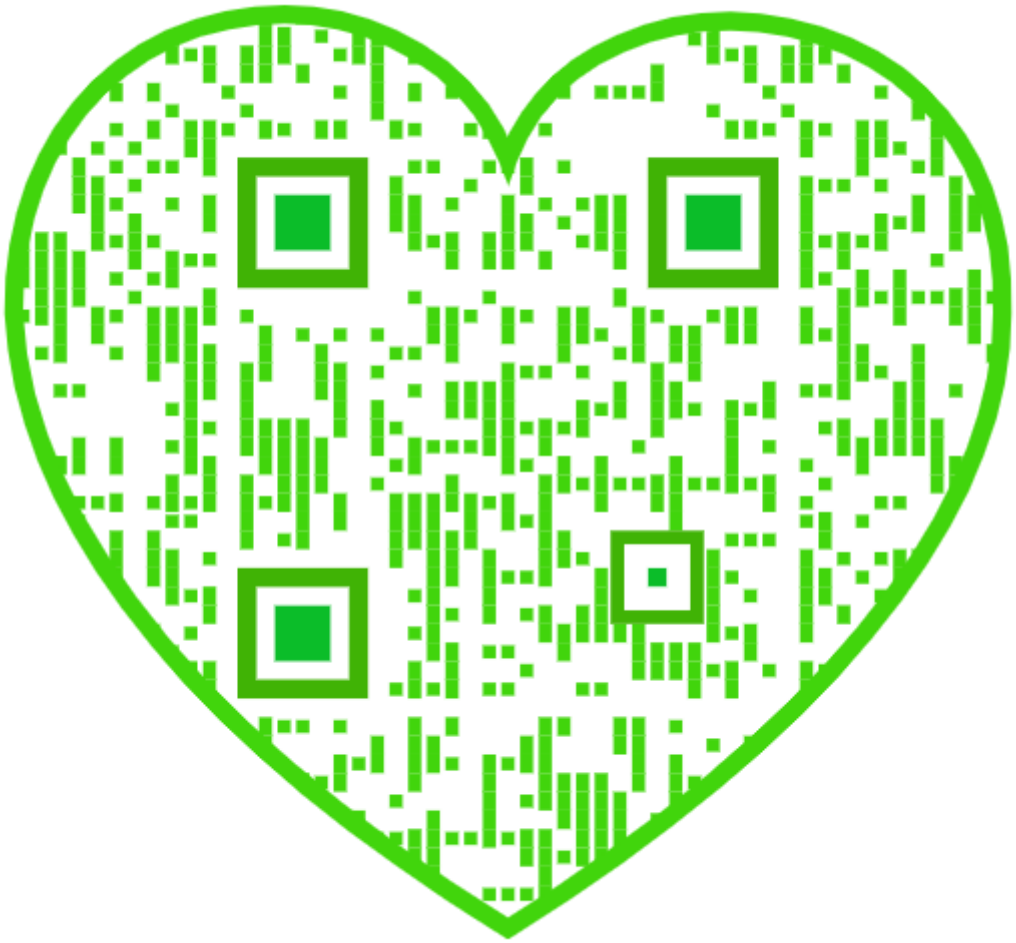

American and English Inventions.

Two weeks ago, we noticed with no small amount of satisfaction, the praise which had been bestowed upon an American machine by the "London Times." We also took occasion to point out the benefits that might be derived by the introduction of American cheap agricultural machines and implements into Great Britain. The praise of the "London Times," we are sorry to say, has given offence to our able cotemporary, the "London Mechanics' Magazine," which takes occasion to indulge in the following language:—

"We are not surprised that American journalists should so frequently remind us that the American people are altogether outstripping our own countrymen in mechanical ingenuity and inventive power. Such intimations, however fabulous in their character, come very inoffensively from the writers of a nation to which all others look for amusing displays of conceit and arrogance. We all know the ardent attachment of that people to a species of literary and scientific pyrotechnics; all their productions go up as rockets, but most of them come down as sticks."

Our cotemporary then quotes the remarks in the "Times," condemns them, and claims the invention—an American Threshing Machine—as "a mere modification of certain mechanical arrangements first invented and patented in England." We hate cant and rant, and although the "Mechanics' Magazine," makes the "Sci. Am.," by name, an exception to all we have quoted, we do say that our cotemporary is unjust in its language. The charge of "conceit and arrogance" may be justly applied against the English with respect to American inventions. Superciliousness is a leading feature of the English press, and with two many of the English people; this characteristic, at least, they have always exhibited towards American inventions and discoveries, until they have been actually forced to swallow their own animadversions. How the "American Department," at the World's Fair was at first ridiculed, we all know; but at last American inventions created more sensation, and excited more attention than those of any other nation. The feats of Hobbs in opening the best English locks, and the failure of all the English locksmiths to open the American lock, are events too fresh in the memories of all to be forgotten. The victory of the yacht "America," was no pyrotechnic display, but a real rocket which carried consternation and envy into the heart's core of the whole Royal Yacht Club of England. The triumphs of the American reaping machines will never be forgotten, and yet no sooner were those triumphs made public, than the American Reaper, (as has been done by our cotemporary) was claimed to be a British invention; some of Bell's machines, it was said, having been sent to America many years before. The fact stands out now, that the American reapers are entirely different in their construction and mode of operation from Bell's.

We know that we are much indebted to England for many excellent inventions; indeed, we cannot number them all, and we do not blame an Englishman or Frenchman, German or Scot, for talking with feelings of pride, respecting what his countrymen have invented. The spirit that we detest is depreciation of what others have done; we condemn such a spirit when we see it displayed in any man, be he an American citizen or an Englishman. Our cotemporary, it appears to us, exhibits such a feeling; if it knew Americans better, its tone would be quite different.. It is not courteous for a scientific paper of any country to sneer at American science. The Members of the Royal Society in London laughed at the "scientific pyrotechnics" of Franklin, when his experiments were first read to them; since then, *they* have been laughed at by everybody. The fresh words of gratitude expressed by the people of Liverpool to a distinguished American—Lieut. Maury—for what he has done in nautical science, for the benefit of the world, are not yet cold upon the breeze.

We have already said that we feel grateful to England for her inventions and discoveries; they have been and still are of immense benefit, not only to America but the whole world; but at the same time America has paid back to England a large amount of her debt, and we intend, in the course of time, to pay it all back with compound interest:—American cut-nail machines, pin-making machines, card-making machines, carpet power looms, gun-stock turning machines, sewing machines, reciprocating reaping machines, superior yacht models, locks and clocks, excavating machines, and superior wood planing, and many other American machines, are now very extensively employed in England. The nature of our country has called forth an amount of inventive genius, which that of no other country could. We have also mechanics in our workshops from all countries in the world, and their combined skill, with such extensive information as all travelled men possess over the untravelled, leads to general excellence. In a late lecture, delivered by Sir Benjamin Brodie, M. D., in London, he stated that a friend of his, after his return from America to England, was more surprised at the passiveness of his countrymen, in comparison with the Americans, than he was with the passiveness of the Spaniards in comparison with the English. Improvement is a passion with us Americans, and although we sometimes mistake novelty for improvement, it only teaches us a useful lesson, but does not arrest our progress, nor make us foolishly conservative. *Our* object, in scientific literature, has been to spread abroad the truth as we believe it, and to consider the scientific men and inventors of all nations, brothers—scientific republicans. Although we have an ardent attachment to our country and her institutions, this we believe has never warped our judgment, nor blinded our eyes to the merits of foreign inventions, and we trust never will.

Horse Power, Actual and Nominal of Steam Engines.

As we have received a number of communications lately respecting the "horse power" of steam engines, we present the following condensed from Bourne, who is held by practical engineers good authority:—

Horse power is an amount of mechanical force that will raise 33,000 lbs. one foot high in a minute. This standard was adopted by Watt as the average force exerted by a strong horse. His engines were made of a certain size, corresponding to their recorded horse power; that is the diameter of the cylinder afforded a key to the power of the engine, as the steam carried was uniform in pressure, and so was the velocity of piston. At the present day, we cannot say that a certain diameter of cylinder is the key to its power. The steam is the power, and some engines whose nominal horse power is given by the bore of the cylinder may exert double the nominal amount.

The number of pounds pressure on the square inch multiplied by the number of square inches in the area of the piston, and by the number of feet the piston travels in one minute gives the amount of impelling force—about one-tenth the power so calculated, is deducted in large engines, for friction—the remainder is the effective force, which if divided by 33,000 gives the actual horse power.

Lightning Conductors.

Mr. E. Merriam, in a communication addressed to the "New York Courier and Enquirer," says:—

The Gem of the Seas, which arrived at Melbourne, Australia, August 2nd, from New York, was struck by lightning during a hailstorm on the 8th of July, which shivered the rod to atoms, and melted it in several places. Several of the passengers were benumbed by the shock, and one of the passengers was transfixed in his chair for some minutes—about the same time the vessel was knocked on her beam ends, while under storm sails.

This adds another to our list of vessels furnished with conductors that have been struck by lightning, in which the conductor was destroyed, but the ship and its inmates were saved. Had the rod been in one entire piece, it would not have been rent, but such rods cannot be used on board ship.

The period in which this ship was struck by lightning was almost simultaneous with an earthquake, felt in the Sandwich Islands, and with a profuse fall of meteors in the vicinity of New York, and succeeded by a hailstorm in France, in which two women and a child were killed by the hail. The sparrows and swallows which were flying in the air at the time, were killed by the hail. A storm of thunder and lightning extended over a large surface in North lat. 43° at the same time. Thus we see electric energies exerted at the same time in both hemispheres, showing the great extent of atmospheric currents.

Recent Foreign Inventions.

Separating Metals from their Ores and Alloys.—James Napier, of Glasgow (author of the work on dyeing) patentee.—This invention relates to the treatment of ores and alloys of copper and tin. The inventor arranges the substances in different classes, and operates upon these classes severally. For example:—in dealing with sulphurets known, or found by testing to contain tin, he mixes them, as far as is practicable, in such proportions that the whole copper in the mixture shall range from eight to fourteen per cent. of the weight of the ores. He then calcines this mixture in the ordinary way, until the quantity of sulphur remaining in the ore does not exceed a fifth of the weight of the copper, when it is transferred to an ordinary fusing furnace, and a hundredweight of coal is added to every ton of calcined ore. (The coal is employed simply in order to obtain clean slag.) The whole is then well-fused, has the slag skimmed off from it, and is run off into sand-beds. The alloy, "white metal," found at the bottom of the first and second beds being removed and reserved for another process, the remainder of the melt may be roasted, and refined as usual, but the inventor prefers to again calcine it for eighteen hours, and then to fuse it along with other ores containing no sulphur. The inventor describes other somewhat analogous processes, and claims the application of his improvements, not only to the ores and alloys of copper and tin, but also to all substances containing portions of copper and tin.

Hardening and Coloring Artificial Stone and Cements.—B. Barrett, of Ipswich, Eng., patentee.—The inventor introduces the liquid indurating substance into an exhausted chamber containing the stone to be indurated, the liquid substance being previously heated to a temperature of about 50° or 60° Fah. When the stone requires to be colored the color is laid on with a brush and allowed to dry, before the indurating process is commenced. The mixture employed by the inventor for indurating stone is composed of 56 parts, by weight, of sulphur, dissolved by the aid of steam or dry heat, and 44 parts of diluted vinegar, or acetic acid, containing 17 parts of acid to 8 of water.

In preparing indurating mixtures to be applied to the exteriors and interiors of buildings, whether the surface be of brick, stone, cement, or plaster, he employs—

Mixture 1.—14 parts by weight of shellac, 14 parts of seed lac, 1 part of coarse turpentine, and 14 parts of pyroligneous spirit.

Mixture 2.—Gutta percha dissolved in coal tar, naphtha, or other suitable solvent, in the proportion of 3 parts by weight, of gutta percha, and 8 parts of the solvent.

Mixture 3.—One bushel of limestone or chalk, 12 gallons of water, 12 lbs. of alum, half a gallon of beer grounds, and half a gallon of gall, well mixed together.

These solutions, when heated, are to be laid on with a brush until the surface will absorb no more.

Soap.—H. C. Jennings, of London, patentee.

This invention consists in converting stearine into soap by means of a carbonated alkali with heat, instead of employing a caustic lye or alkali, with long boiling. The patentee uses in combination with stearine, whether obtained from palm oil, tallow, or any other vegetable or animal substance that yields stearine, such portions of common fat, or resin, or other substance, as will tend to cheapen the manufacture, and produce the commoner kinds of soaps. The result of this process is a harder and more neutral soap than that ordinarily produced.

[Collated from our foreign exchanges, "Mechanic's Magazine," "Newton's London Journal," "Artizan," "L'Invention," Paris, &c.

Chemical Action of Solar Radiations.

The following paper from the "London Atheneum," by R. Hunt, who has devoted so much attention to such subjects, will be read with interest by all our opticians and photographers. We learn from it how much of the mysterious and unknown still enshroud the subject of "light," which Milton terms "offspring of heavens' first dawn:"

"This is an account of the continuation of an examination of the chemical action of the rays of the prismatic spectrum, after it had been subjected to the absorptive influences of different colored media. The mode of examination has been to obtain well-defined spectra of a beam of light passing through a fine vertical slit in a steel plate by prisms of flint and crown glass, and of quartz. The spectrum, being concentrated by a lens, was received upon a white tablet, and submitted to careful admeasurement; the colored screen (sometimes colored glass and sometimes colored fluid) was then interposed, and the alterations in the chromatic image were carefully noted; the chemical preparation was then placed upon the tablet, and the chemical impression obtained. The relation which this image bore to the luminous image was a true representation of the connection between the color of a ray and its power to produce chemical change. The examination was extended to the photographic preparation known as the calotype, and to iodide and bromide of silver in their pure states, and when excited by gallic acid, M. Edmond Becquerel, in a paper communicated to the Academy of Sciences, of which an extract appears in the "Comptes Rendus," Vol. xvii. p. 883, states 'that when any part of the luminous spectrum is absorbed or destroyed by any substance whatever, the part of the chemical rays of the same refrangibility is equally destroyed.' The author's experiments prove that this conclusion has been formed too hastily. Although there are many absorptive media which, at the same time as they obliterate a particular colored ray, destroy the chemical action of the spectrum, yet there are a still more extensive series which prevent the passage of a ray of given refrangibility, and do not, at the same time obstruct those rays which are chemically active of the same degree of refrangibility. This is particularly exemplified in the case of glasses colored yellow by different preparations. With some of these, the blue rays are obliterated, the chemical action of this part of the spectrum not being interrupted; whereas in some other examples those rays permeate the glass, but are almost entirely deprived of chemical power. A still more curious fact is noticed for the first time, of some media which have the power, as it were, of developing chemical action in a particular part of the spectrum where the rays did not appear previously to posses this power.—Several glasses exhibited this phenomenon to a certain extent, particularly such as were stained yellow by the oxyde of silver; but one glass showed this in a remarkable manner. This glass was yellow when viewed by transmitted light, but it reflected pale blue light from one of its surfaces; it obliterated the more refrangible rays down to the green, and rendered the yellow rays far less luminous than usual. In nearly every case the yellow rays are found to be not merely inactive, chemically, but to prevent actively chemical action. After the spectrum has been submitted to the action of this glass, *all chemical power is confined to this yellow ray.* The author has hitherto supported the view, that photographic phenomena and the illuminating power of the sunbeam were distinct principles, united only in their modes of motion. He was led to this from observing that where there was the most light there was the least power of producing chemical change; and as illuminating power diminished, the chemical phenomena of the solar rays increased. The results, however, which he has obtained during the sunshine of the past summer, lead him to to hold that opinion in suspension. In many of the spectra obtained, there appears to be evidence of the conversion of one form of force into another, the change indeed of light into actinism or chemical power; and, again, the exhibition of the ordinarily invisible chemical rays in the form of light.

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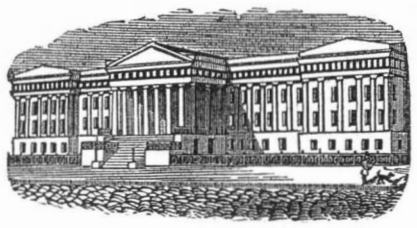

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING NOVEMBER 29, 1853.

FLUID LAMPS—By Samuel Allen, of New York City: I claim the horizontal flame tube, for burning camphene and like fluid, having a long slit cut in its top, in combination with the wick, when incased in wire gauze, the incasing of the wick in gauze causing the fluid to be discharged and burned in a sheet the full length of the slit, as described."

[See notice of this invention on page 268, Vol. 8, Scientific American.]

CONDENSING SMOKE AND GASES—By J. Bloom, of East Woburn, Mass.: I do not claim the use of revolving fans or blowers, for the purpose of forcing air or smoke down through water, for the purpose of purifying the same, as this has been tried before and found incapable of producing the desired result, the fan being powerless for the production of pressure to any practicable or useful extent, and will not answer for the purpose.

But I claim passing the smoke of furnace or other fires through water, by means of air pumps, in the manner set forth.

GOLD SEPARATOR—By M. C. Gritzner, of Washington, D. C.: I claim the arrangement of the screens (two or more), one having oblong and the other square meshes, the square meshes being of the same size of the short diameters of the oblong meshes, for the purpose of separating and retaining the leaf or flake gold, and permitting the balance of the material to be subjected to the blast in uniform or nearly uniform sizes, so as to be differently operated upon by their different specific gravities, as described

I also claim the interposition of the guide rollers, or their equivalents, between the shaking hopper and the blast, for the purpose of guiding or bringing the material in a proper manner to the blast, as described.

IRON FENCE—By B. F, Miller, of New York City: I claim constructing the top and and bottom rails in lateral halves, and holding said halves together by screws, rivets, or bolts, in combination with bosses or pivots cast on the inside of the respective halves of the rail with corresponding countersinks or perforations near the ends of the filling bars, as shown.

TRIP HAMMER—By John W. Peer, of Schenectady, N. Y.; I claim the arrangement of the screw cam, and the adjustable table to which it is attached for the purposes described.

[See notice of this improved hammer on page 76, this volume.]

ATTACHING HANDLES TO THE BLADES OF TABLE KNIVES—By D. N. Ropes, of Meriden, Ct.: I do not claim the exclusive right of soldering or brazing metallic handles on the blades of knives and forks, nor of uniting handles made of other materials in the ordinary way to the bolsters of table knife and other blades by mechanical means.

But I claim the use of the metallic cap interposed between the handle and the blade of the knife or fork, and secured to each, as described.

ARRANGEMENT OF VALVES, PORTS, AND PASSAGES FOR OPERATING STEAM HAMMERS—By R. R. Taylor, of Reading, Pa.: I claim the arrangement, as described, of the steam ports and passages, the variable automatic valve for directing the steam alternately above and below the piston, and for admitting a variable quantity of steam beneath the piston and the adjustable hand valve, to exclude altogether the steam from above the piston, or to admit a greater or less quantity of it, both valves being adjustable, while the hammer is in operation, so that the steam can be made to act with a variable force, on either the up and down strokes of the piston, or of both, or prevented from acting on the down stroke, without interrupting the action of the hammer, as set forth.

VIBRATORY SPRING OF BALANCE CLOCKS—By S. B. Terry, of Plymouth, Ct.: I claim making the crutch spring perform the office of the common hair spring in producing the vibrations of the balance, as set forth.

SEED PLANTERS—By R. C. Wrenn, of Mount Gilead, Ohio: I claim the combination of the slides, cams, and elbow levers or shifters, arranged and operating as set forth.

[See notice of this invention on page 276, Vol. 8, Sci. Am.]

COUPLING SHAFTS TO AXLES—By E. B. Benedict, of Clinton, N. Y.: I claim the combination of the clip, tumbler, and draught iron, as described, for the purpose of a secure and expeditious attachment of the shafts or pole to carriages and other vehicles.

COMBINED INDIA RUBBER AND STEEL SPRINGS—By E. T. Bussell, of Shelbyville. Ind.: I do not claim surrounding a column of vulcanized india rubber with a helical spring, as that is the subject of a patent granted to F. M. Ray.

But I claim the fluting a column of vulcanized india rubber longitudinally, and then so surrounding it with the helical spring, mine being an improvement upon Ray's spring.

STONE SAWS—By Samuel Chapman, Jr., of New York City: I claim the application, adaptation, and arranging, as described, or in similar manner, a series of circular saws, whereby I obtain from this combination of parts and motions the desired mode and effect of sawing or severing stone.

MACHINES FOR WASHING ORES—By Richard Edwards, of Eagle River, Mich.: I claim the rotating hopper and the suspended oscillating basin, arranged and operated as described.

[See notice of this inuention on page 52, this Vol.)

TIGHTENING PACKING OF ENGINE AND PUMP PISTONS—By John Crabtree & Joseph Hopkinson, of Philadelphia, Pa.: we claim tightening the packing of the piston by the rod passed down through the hollow piston rod and attached to the follower, the nuts, key, and hollow piston rod, combined and operating as described.

SHINGLE MACHINE—By Israel Graves & C. A. Bogert, of West Dresden, N. Y.: We claim a machine for sawing shingles, and which may be adapted to sawing other irregular shapes, constructed with a gang of stationary and movable saws, arranged vertically in a saw gate, which moves up and down, the movable saws of said gang being caused to have a gradually lateral movement from and toward the stationary saws, while cutting by means of grooved cams, which operate upon the pintle of the sliding bars, carrying the movable saws, and thereby communicating said lateral movement to the said saws, at the same time having a movement slightly out of a parallel line with the direction of feed communicated to them by other cams, which operate upon the pintle of the sliding bars, the said movements causing the stuff to be cut tapering, or of any required form, as described.

[This is an ingenious and we think useful improvement in shingle machines.]

SUPPORTING FALLING TABLE LEAVES—By Chas. Phelps, of Salem, Mass.: I do not claim the application of a hinged brace for supporting the leaf of a table, nor making it slide in a staple or guiding aperture, nor the use of a spring for throwing it into its catch, merely as such.

I claim the application of the falling leaf of a table of a hinged supporting brace, in the form of a bent lever combined with a spring on the under side, for throwing it upward into its catch, whereby the table-leaf can be conveniently released to let down by a pull at the short arm of the bent lever, as described.

HYDRAULIC CEMENT PIPES—By J. B. Poague & Wm. F. Poague, of Fancy Hill, Va.: I claim, first, in combination with the moulds permanently lined with cloth or other porous flexible material, the air spaces intermediately placed between the fastenings of the cloth, so that it may give to the pipe or mould as it is stripped from the pipe, as described.

We also claim the manner of withdrawing or stripping the cloth from the inside of the freshly formed pipe, by attaching it to the end of the mandrel, the cloth will turn inside out, and strip from the pipe, as described.

MACHINES FOR POLISHING LEATHER—By Frederick Seibert, of Williamsburgh, N. Y.: I claim a circular or curvilinear glass rubber combined with giving it a tilting motion for the purpose of enabling it, after passing off, the edge of the leather at the end of the stroke, to rollback and mount upon the leather without scraping it up, as described.

MACHINES FOR SCIVING BOOT COUNTERS—By S. J. & C. H. Trofatter, of Salem, Mass.: We are aware that there is nothing new in combining pressure rollers with guides and plane irons or cutters, for the purpose of reducing strips of board or other material, we do not claim such.

But we claim the peculiar arrangement of the axles of the pressure and draught rollers in convergent lines, in combination with the curved guides as applied to the knives, the whole being made to advance a curved piece of leather between the guides with an equality of pressure against the guides, or without such undue pressure against either as would cause one edge of the leather to be bent up and injured or imperfectly cut by the knives while passing through the machine.

COMBING FIBROUS MATERIALS—By J. Heilmann, administrator of the estate of Joshua Heilman, deceased, of France. Patented in France Dec. 17, 1845: I claim, first, the segment drum, censtructed as described.

Second, I claim the jaws for griping and presenting the wool properly to the combs to be combed, and in connection therewith the bars and comb for delivering the wool.

Third, I claim the rollers, or their equivalent. for seizing and retaining the wool, as it is combed, and forming it into a continuous sliver, as described.

POWER LOOMS—By Wm. Baird (assignor to J. J. Hepworth), of Philadelphia, Pa.: I claim the arrangement of the plate with its spring, link, staple, and pin, so that when a picker strap breaks, the picker staff will relieve the plate and thus immediately arrest the forward motion of the lay, as described.

SCREW JACKS FOR RAISING BUILDINGS—By Frederick Nicholson, of Warsaw, N. Y. (assignor to N. A. Hume, of Rushford, N. Y.): I claim the peculiar combination and employment of the hook, the lifting frame, the screw, the divided nuts, and the supporting frame, their combination being such that by the alternate employment of a pair of divided nuts, held stationary in transverse notches of the supporting frame, the screw may be continued up to any desired night, carrying with it the lifting frame, in which it is confined, and which slides in the longitudinal grooves of the supporting frame, and carries along with itself the hook. as described.

DESIGN.

COOKING STOVES—By S. F. Moore, of Batavia, N. Y.

NOTE—Six of the patents in the above list were secured through the "Scientific American Patent Agency." We have constantly in our employ a large and efficient examining force, which enables us to dispatch a large amount of business, and inventors who wish to employ us to prepare their applications for patents, can rely on receiving prompt and efficient attention. A circular of information is distributed gratuitously to those who may wish instructions how to proceed with an application.—It affords important information to those who prepare their own specifications and drawings. Address Munn & Co.

(For the Scientific American.]

Foreman's Process for Raising Ships.

The remarks in your issue of the 26th Nov., on the subject of my experiment in raising a sunken vessel at the Atlantic Dock, Brooklyn, call for explanation on my part, for which I trust you will find room in your estimable paper.

The term "Electric" is used in connection with this process to convey concisely an idea of its rapidity, and nothing more; at the same time this rapidity is a very important feature in my plan, and in practice an item of much value.

The generating apparatus employed on that occasion is capable of lifting, without recharging, 100 tons dead weight, from a depth of 33 feet of water, in from 10 to 15 minutes, and as you may infer, can lift by re-charging 6 times that weight, or more, in 2 or 3 hours time.

In practice, generators will be employed having a lifting capacity of about 1,000 tons for that depth of water, and the consumption of time will be about 20 to 30 minutes, and the vessels will be by no means bulky.

In that experiment the hose used was collapsible, but able to withstand an inside pressure of 60 lbs. per inch, it did not burst, but was pressed or pushed off an iron union, 3 inches long (connecting two lengths of hose) to which it was lashed with twine, and was disengaged therefrom by the damming of the gas caused by "kinking" of the hose, produced by its collapsibility.

It would have been preferred by me to have had the full amount of ballast on board the vessel, that the lifting capacity of the casks would warrant, but that plan was precluded by opposition over which I had no control.

I have only to add that inventors are not always able to secure what they deem necessary to develope publicly an idea or a principle in thorough working order; that this experiment was made with apparatus, two-thirds of which were merely employed in place of something better, but costly, and that the apparatus now constructing for "The New York Submarine Wrecking Co." will, so far as my judgment can ensure, be of such substantial character, that in less than 60 days, the public shall have ample and practical proof that the principle is tolerably well developed, and the Company be positive of the fact by the most telling evidence—a liberal credit margin in its ledger.

YELLARD FOREMAN.

New York, Nov. 30, 1853.

[For the Scientific American.]

The Cincinnati Steam Fire-Engine.

Having recently had the pleasure of witnessing the Steam Fire-Engine, at Cincinnati, I send the following notice in regard to it. I would observe, that the trial or exhibition of its powers were quite unexpected, on the part of those who operated it; in fact we (for there were six or eight of us) were obliged to await the return of the horses, from drawing fuel for the engine, before it could be taken out.

The notes of time were as follows:—At 11h. 45m. A. M., the fire was lighted under the boiler, and horses harnessed; at 11h. 48., horses started out with engine, and ran with it about three squares, to a public cistern; at 11h. 51½m., small engine for pumping boiler started; at 11h. 57m., the fire-engine started under steam; at 11h. 58½m., commenced playing one stream 1¼ inch nozzle; at 12 M., commenced playing two streams 1¼ inch; these streams were played through 100 feet of hose, and from 80 to 100 feet in height. After playing a short time through these nozzles, they were taken off and one nozzle of 1½ inch diameter was substituted, and played through the same length of hose to a height of about 90 feet. It will thus be seen that in 15 minutes from the time of lighting the fire and starting out of the engine house, it was playing two streams 1¼ inch diameter.

I consider that the rapidity with which this engine is brought into operation is its great recommendation; this is accomplished by the peculiar boiler used, viz., a coil of pipe to which the heat is applied, and into which water is slowly injected as soon as the fire is lighted; after steam is raised, this supply is furnished by a small pumping engine driven by steam.

It is intended to so regulate the quantity of water that it shall only be supplied as fast as evaporated, there being in reality no reservoir of water within the boiler, and this is one reason for the boiler being very light. The machine has two steam cylinders 10 inches in diameter, and two feet stroke; driving two fire pumps 6 inches in diameter by two feet stroke.

The whole weight of the machine, in running order, I was informed, is five tons; but I understand that the Messrs. Latta, the inventors of it, are now building another of the same size, the weight of which, they expect, will be but little over four tons.

I should mention that the machine is run on three wheels—the forward end being supported by a single wheel only, secured on a pivot, thus they are enabled not only to turn very short corners in running through the streets, but when standing, to rest firm on its "three legs."

The machine, as a whole, shows much ingenuity in its general arrangement and adaptation for its special purpose.

While I thus pay what I deem no less than a just compliment to the ingenious inventors and builders, I would not, as a candid observer, omit to mention what I deem to be its faults:—

First, its great weight; but as I am informed this will be very much reduced in new engines, I may say of it, "it was, but is not."

Second, I noticed that the pressure of steam was very irregular, and as a consequence the operation of the engine partook of the same irregularity; this should be remedied in such a manner as to have perfect control of the pressure of steam, which perhaps might be done by simply increasing the size of the steam chamber.

Third; the last defect I would mention is, that there being but two cylinders, and these of course connected at an angle of 90 degrees, and there being no fly wheel or regulator of the power applied, the pistons moved by starts and jerks. It occurred to me while watching their operation, that the addition of another cylinder, so that there should be three cylinders, with the cranks at an angle of 120°, the motion would be rendered nearly uniform, though there might be no fly wheel. At no time, however, during these experiments, was the engine put up to its full power. I was informed that it had, upon a previous occasion, thrown water through 100 feet of hose, and two 1¼ inch nozzles to a hight of 120 feet, and also through the 1½ inch nozzle to the same hight, and horizontally 230 feet. It requires steam of 100 lbs. pressure to the square inch, at least, to produce these results. OBSERVER.

New York, Nov. 26, 1853.

Good Gum Paste.

MESSRS. EDITORS—In the several communications which have recently appeared in your journal, with reference to a method of preparing a paste of gum arabic that will not deteriorate by keeping, there seems to have been no formula given by which a really permanent paste can be made. I offer the following recipe:—Take of gum arabic 3 oz., sugar (white) 1 oz., water (cold) 4½ oz.; acetic acid, ¼ oz. The gum should be first dissolved in the water, then add the sugar, and lastly the acid. This affords a beautiful, almost colorless, and permanent paste, possessing the adhesive qualities of the gum, and will answer almost all purposes for which a paste is required. A. TATEM.

Philadelphia, Pa., 1853.

Splendid Carriage for the Secretary of State

We visited the store of Lyman J. Lloyd, on Saturday last, to see the set of harness which he made to order for the Hon. Wm. L. Marcy, Secretary of State. The polished trappings were produced and laid before us. The harness are manufactured from the best piece of leather we have ever seen—the dazzling surface of which reflects your picture as distinctly almost as a mirror. The mountings are of silver plating, and the crests are selected with superb and faultless taste. If anything that is worn by the caparisoned steeds of Washington Avenue can excel this harness, we are greatly mistaken. The harness is worth two hundred dollars. After leaving Mr. Lloyd's we visited Gould's Coach Factory, and were shown the carriage of the premier. It is certainly a dashing affair. The panels are highly polished; the lamps elegant; the turning geer light, symmetrical, fantastic, and firm; the wheels striped with a delicate white line, after the latest European fashion; and the trimmings luxuriously comfortable.—There are many improvements connected with it—for instance, a speaking trumpet leading to the coachman's box, a card drop in the door, and the body is so constructed as to admit of the panel being removed in the summer season, when it can be converted into a delightful open vehicle.

[The above is from the "Albany Knickerbocker;" we suppose the carriage is a present by some of the citizens of Albany. We notice it particularly for the speaking trumpet mentioned; it is a decided improvement.

Supper in a Gasometer.

A unique entertainment was recently given in Paisley, Scotland, by Messrs. Hanna, Donald & Wilson, who, having just finished the erection of an enormous gasometer at the Paisley gas works, resolved to celebrate the occasion. Accordingly, in accordance with their invitation, 180 of the leading gentlemen of the neighborhood assembled to sup in this singular supper room. Entrance was obtained through a hole in the side of the holder, and thence by a flight of steps to the bottom—a distance of 20 or 30 feet. The inside was neatly decorated with flags and evergreens, and brilliantly lighted with gas, presenting somewhat the appearance of a circus.

The above is paralleled by an entertainment which was given in Connecticut about a year since, by the proprietors of a soap factory. An excellent dinner was served up in a mammoth soap boiler, to some fifteen or twenty admiring guests.

Instantaneous Black Ink.

Dissolve one ounce of extract of logwood in 72 ounces of warm rain water, then filter and add, while warm, a solution of 30 grains of neutral chromate of potash in a very little warm water; shake it well and the ink is made. This recipe will enable any person to make his own ink.

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New Inventions.

Improvement in Rock Drills.

By Edwin G. Dunham, of Portland, Conn. This invention consists in arranging a horizontal ring-plate loosely on the drill rod, which plate is operated by means of a lifter, in such a manner that it will be caused to incline slightly during the raising of the drill bar, and consequently to bite upon said bar and hold it firmly until it is raised to the position desired, and then again to assume nearly a horizontal position and allow the drill bar to fall. The plate falls with the bar, but slides upward as the hole increases in depth. The friction of the plate upon the drill bar, and the force of the blow, are increased by a spring, which is bent by the plate in its upward motion, and thus accelerates the downward stroke. Another similar friction plate is upon the bar for lifting and holding it entirely out of the hole.

Corn and Cob Mill.

F. M. Killgore, of Athens, Tennessee, has invented and applied for a patent upon an improvement in mills for grinding corn. The invention consists in having a cylinder provided with radial V-shaped teeth, said teeth forming circles or rings upon the cylinder, placed side by side. the edges of the teeth of every alternate ring being in a line between the edges of the teeth of its adjoining rings. The teeth of the cylinder run in V-shaped grooves in a concave, the grooves being corrugated or toothed in a direction tangential with a circle somewhat smaller in diameter than that of the cylinder. The teeth of the grooves in the concave are so placed that the edges of the teeth in every alternate groove, are in a line between the edges of the teeth in the adjoining grooves.

Improvement in Pianofortes.

Albert T. Corliss, of Portland, Me., has applied for a patent upon an improvement in pianos, which he denominates the "Swell-Mute Attachment." The object of this invention is to hold the tone of the instrument in more perfect subjection to the performer, and to produce effects on the piano corresponding with the effects produced by the swell of the organ. It consists in the employment of clamps so arranged within the instrument, and controlled by suitable mechanism, that the performer can at pleasure cause them to press upon both sides of the bridge and hold it in such a manner as to control the vibration of the sounding-board and thus regulate the tone.

Improvement in Seed Planters.

Jarvis Case, of Selma, Ohio, has invented and taken measures to secure, by letters patent, an improved seed planter. The nature of the invention consists in the employment of two slides connected together and operated simultaneously; one is placed at the top and the other at the bottom of the conveyor spout. The slides are also operated in a peculiar manner. This enables the seed to be dropped directly in the hill or furrow without being affected by the motion of the machine.

Improved Journal Box.

George H. Hoagland, of Susquehanna, Pa., has applied for a patent upon a new journal box, the object of which is the more effectual exclusion of dust and dirt. What is claimed as new is the construction of the journal box of a single piece or casting, and providing at its outer end a collar having an elliptical bore, and a flange, to which is secured a strip of leather, which fits around the axle. The inner or opposite end of the box is provided with a flange, which fits within a circular ledge on the inner side of the wheel, packing being employed between them if necessary.

Improved Fly Trap.

David & Samuel K. Flanders, of Parishville, N. Y., have invented a new fly trap, on which they have applied for a patent; a circular disc, having its upper surface divided into four sections by curved ledges, is rotated by clockwork, and as each of the compartments formed by these ledges is brought under a glass cover, it is swept by a wiper, and all the flies attracted by molasses or other substance, are swept into a vessel of water. It is a very ingenious *fly-trap.*

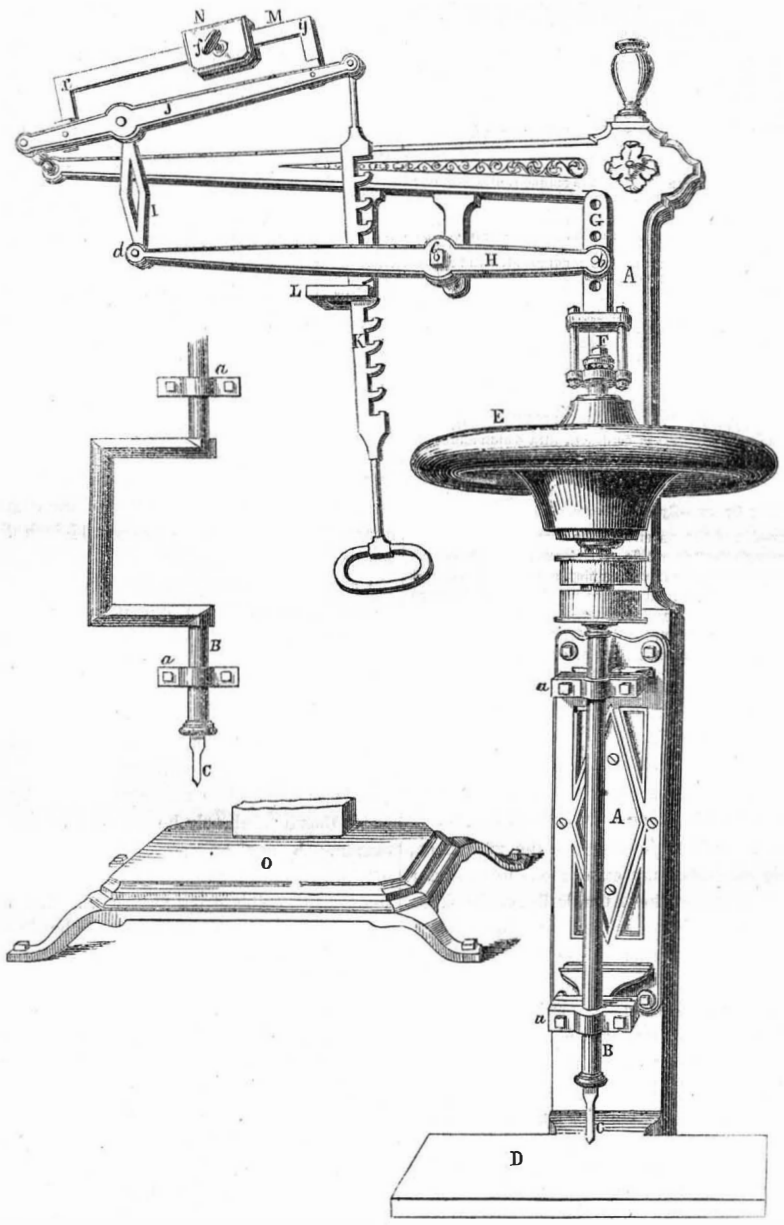
Protection for Carriage Springs.

Wm. N. Reed, of Lancaster, Wis., has invented a method of protecting from breaking the elliptical springs of carriages. It consists in the employment of a vertical rod, which passes down through the bottom of the wagon, sand-board, spring, and axle, for the purpose of bracing the spring and preventing it from bending backward or forward, right or left—the said rod securing all the parts together while it keeps the elliptical spring upright, and thus removes one great cause of breaking. The inventor has applied for a patent.

Furnace for Steam Boilers.

G. W. Cotton, of St. Louis, Mo., has invented an ingenious improvement in furnaces for steam boilers. The nature of the invention consists in having T-shaped bars suspended on pivots, with their upper edges serrated and fitting in each other. These bars, at one end, are attached to a connecting-rod which is actuated by a crank outside the furnace, so that all that is necessary to stir the fire is to turn this crank. The inventor has applied for a patent.

SELF-FEEDING METAL DRILL.



The engraving presented on this page is an illustration of a drill, for which a patent was granted to Warren Lyon, of this city, September 20, of the present year. The novelty of the implement consists in having a weight attached to the arbor of the drill, for the purpose of giving the requisite pressure, and in having a system of levers and a counterpoise connected to the upper part of the arbor, for the purpose of elevating it and graduating the pressure communicated to the drill by the weight upon the arbor.

A represents a standard, to which is attached the bearings, *a a*, through which the arbor, B, plays loosely. In the lower end of B is fixed the drill, C, working toward the bed-plate, D. On the upper end of the arbor, B, is attached a weight, E, in the form of a balance wheel, which is of sufficient size to give the requisite pressure to the drill. To the upper end of the arbor there is attached by the swivel, F, a small upright, G, to which is secured by a pivot, *b*, one end of a lever, H, having its fulcrum at *c*; the opposite end of the lever is attached by a small connecting rod, I, to a lever, J, having its fulcrum at *d*. The inner end of the lever, J, has a rack-bar, K, suspended from it, which passes through a slot in the end of an arm, L. On the upper surface of the lever, J, there is secured a horizontal rod, M, on which a counterpoise, N, slides. This counterpoise may be secured firmly to the rod, M, at any desired point by a set screw, *f*.

The article to be drilled is placed upon the bed-plate, D, and the drill, C, bears upon it with sufficient pressure to give the necessary feed owing to the weight, E. The pressure is always regular, hence the drill is not as liable to be broken as where there is an irregular feed. Where it is necessary to withdraw the drill from the work, the rack bar, K, is drawn downward and made to catch on the front side of the recess, at L, through which it plays, the drill is thus suspended until the work is shifted, the rack-bar is then freed from the recess, and the drill is allowed to descend.

By properly adjusting the counterpoise, N, the pressure upon the drill may be graduated as desired. The motion may be communicated by a belt upon the fast and loose pulley upon the arbor, or this may be removed, and the crank substituted. O is the base of the machine, secured to the floor as shown in the engraving.

For further information address the patentee, No. 8 Christopher street, where one may be seen in operation.

New Watch Escapement.

John Devlin, of Philadelphia, has applied for a patent upon an improved escapement for watches. The invention consists in the use of a fork, having its two prongs in different planes, attached to the lever now in common use or otherwise attached to the pallets, and which alternately acts, and is actuated by two ruby pins which are attached, one above the other, to the axis of the balance, and are parallel with the same.

Cooking Stove Improvement.

It would be a decided improvement, we think, to have common large cooking stoves made with two grates—the present ones made in two parts—instead of having each in one piece. There should be a division plate between the two, so as to divide the fire boxes—making two fire-places. The division plate may be made of cast-iron, and hollow, so as to let a current of air pass through to keep it cool; or it may be of fire-brick.

The advantages of dividing the fire are these:—one fire may be covered up and kept *alive* all night, and the other suffered to go out so as to have all the ashes cold, and ready to be cleaned out next morning. The small fire maintained on the one side will keep a kettle warm all night, and provide hot water for an early breakfast next morning. This plan of grates would also have the advantage of using only one fire, when the weather was moderately warm—when a large fire would be too hot—and of using the two fires when the weather was very cold. It may be said "that the fire in any common coal stove, can be maintained all night, and there is therefore no necessity for dividing the grate." A coal fire, however, will not burn well in common stoves, unless the grate is cleaned out every twenty-four hours, therefore a double grate affords the means of doing this, and at the same time without suffering "the fire to grow cold on the hearth." We only speak of large cooking stoves; the small sizes have not furnace space for the working of a double grate, and a central plate, but the large ones certainly have enough of room for the improvement.

Hats versus Heads.

When the public, in their enthusiasm for Kossuth and Hungary, adopted the Hungarian style of hat, we ventured to hope that the reign of stove-pipes was ended—that the enjoyment of the ease and comfort which they gave would cause such a dislike to the barbarous "beavers" that people *would* wear them, and set foreign fashions at defiance. But we were mistaken, for the people go about wearing stew-kettles on their heads, with as much complacency as ever, and we suppose we shall have to submit to the usual amount of headaches without a murmur, for fashion has so decreed. Who will take the lead and get up a "Kosta Hat," or a "Mitchel Hat," or a hat of any name, that will be easy to wear and healthy to the scalp?—Where is Genin or Knox?

Hot Air Again.

A correspondent inquires of us why it would not be judicious to fill the spaces around the pipes in the *cooler* of Ericsson's new engine with cold air in its passage from the pumps to the *heater*, instead of water. It is somewhat surprising that after all which has been said upon this subject it should yet be such a stumbling block. To make it plain. Suppose that two pistons should be placed in a single cylinder and the air between them should be heated, would it not act equally upon both pistons? Most certainly, yet this is the very principle involved in any attempt to use the heat over again by transferring it from the exhaust to the cold air, for this must be done between the piston of the air-pump and the piston of the cylinder, so that all the expansive force of the heat acts just as much against the air pump as the cylinder piston, and all that is gained in the latter is required to be exerted upon the former. It seems to us that this is so plain that a child might comprehend it, yet we behold civil engineers of the highest pretension continually overlooking it!

Stockholders of railroads are liable for damages in the use of patentaed articles or machines on their railroads. A case of this kind was decided by Judge Nelson, on the first inst., in this city, a more full account of which we shall present next week.

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Scientific American.

NEW YORK, DECEMBER 10, 1853.

Sewing Machine Troubles.

The loud notes of an approaching conflict between Walter Hunt, of this city, and the owners of several patents on "sewing machines," after having been sounded for a number of months in the shape of advertisements through our daily papers, are now heard re-echoing from the halls of the Patent Office.—As stated in his card published by us on page 21, Hunt has applied for a patent and an interference has been declared by the Commissioner, between him and fifteen others, eight of whom have obtained patents on sewing machines, in order to arrive at some definite conclusion respecting the following points, namely, "who is the inventor of the eye-pointed needle, and who is entitled to a patent for it; also who is the inventor and entitled to the patent for sewing seams with a lock stitch formed with two threads, by a shuttle and a needle."

The eye-pointed needle, we believe, is public property. Who invented it we cannot tell, but it has been in public use—unclaimed, for at least seven years. It is not distinctly embraced—as a device—in the claim of any patent yet granted. E. Howe, Jr., obtained a patent on a sewing machine in 1846, in which the manner of forming seams by shuttle and needle is claimed as a combination, but not the eye pointed needle as a *specific device*. As this needle has not been claimed in any patent as a distinct device, it is certainly public property by the general equity principle of *abandonment*. A case bearing on this very point was decided by Judge Kane, of Philadelphia, Sept. 10, 1851; it was Battin vs. Taggart, respecting the use of a Coal Breaker. His opinion was as follows.

"Neither section 13, Act 1836, nor section 7, 1837, authorizes a change in the character of the claim—the substitution of a different patentable subject. Were the law otherwise, it would be a perilous thing to admit of improvements into the machinery and processes of our workshops. There would be no knowing what was patented and what was public; an inventor would only have to amplify his description, and illustrate it well by drawings and models, postponing his claim to some part or other of it, until it had passed into public use, to be secure of perfectly legitimate rights of action for discussion afterwards in the courts, or more *profitable* adjustment by compromise." This was a decision upon *part* of a machine which had been described in a patent granted in 1843, but not claimed; it was afterwards surrendered, and a new patent obtained with a new claim, in 1849, embracing that specific *part* unclaimed before. The decision therefore was to the effect that the new claim was null and void, and that the *part* claimed was public property on the principle of *abandonment*. It had been in use for six years—one year less than the period since Howe's patent was granted. If this is law and practice in the case of a device which was described in a patent, it is certainly good law and practice against the claim of Hunt, who never obtained a patent, and whose sewing machine was invented no less than seventeen years ago—ten years before Howe obtained his patent. If such a principle of action as that which Hunt claims, were allowed in patent cases, it would destroy the very spirit and intent of our whole patent code, for instead of encouraging inventions it would retard their progress. Such a principle would hang like the sword of Damocles over every inventors' neck; it would make inventors afraid of introducing any useful improvement into public use, lest after they had developed its advantages and made it a public benefit, some speculator in models should disentomb some rusty, ricketty machine from some old dusty dormitory, claim the new invention as his own property, obtain a patent, and sue for damages.

It appears *more than curious* to us, that the great value and importance of the eye-pointed needle was not discovered by him who claims to be its inventor, until its importance, as well as that of sewing machines themselves, had been developed and rendered a public benefit by others. It does not look well, after seventeen years have passed away, to come forward now and claim this device, especially after others have expended thousands of dollars in improving and introducing sewing machines into public use. Thousands of these machines under patent seals have been sold to parties and individuals in different parts of our country, Hunt having neither invented nor constructed a single pin or wheel belonging to one of them, yet he comes forward, *very modestly*, and says when he gets his patent, he shall insist on obtaining compensation from all who are using such machines. We confess there is now a fine field for speculating on such honest purchasers in obtaining compensation, but the people have rights as well as speculators in inventions, and we tell them that the rights which they have purchased with their sewing machines, cannot be disturbed now with new claims for the eye-pointed needle. Hunt has stated that *adverse circumstances* prevented him from obtaining a patent on his sewing machine at an earlier date; we regret to hear of any inventor being buffetted by misfortunes, but it is very strange that such *adverse circumstances* did not prevent him from obtaining five patents since the time he claims to have invented his sewing machine, and this is the more strange because these were but trifling affairs in comparison with this seventeen year old invention. The Commissioner of Patents is a good lawyer, and we have no fears of his judgment in such a case as this. He will no doubt consider the principle of *abandonment*, respecting the eye-pointed needle and decide accordingly.

The question of "abandonment" in inventions, is one which deeply concerns all those who purchase, sell, and use machinery. The public welfare, the advancement of science and art; the mechanic, the inventor, and the capitalist; the merchant who sells, and the citizen who buys, demand that a clear and definite line should be drawn between that which is public property and that which is not. Viewing the "sewing machine controversey" in the light of reason, justice, and sound policy, and after a faithful, and as we believe an impartial examination of legal claims, it is our opinion that the great disturber of the peace—the eye pointed needle—is public property.

Patent Office Report for 1852---No. 7

Examiner F. S. Smith's Report.—This examiner has charge of those classes of inventions formerly under the charge of Mr. Fitzgerald—whose decisions were so often caviled at by inventors. These inventions are divided into three classes, namely, hydraulics and pneumatics; machines for manufacturing lumber, and machines for manufacturing all kinds of fibrous and textile fabrics. It requires a great amount of knowledge and skill to examine and decide correctly upon such inventions; the charge of them, therefore, is a very onerous one. The number of applications passed at this desk during the year 1852, was 134; the number rejected 293. Some of the patents granted, it is said, "display great ingenuity and mechanical skill, showing the inventors to be well acquainted with the principles and mode of action, as well as the defects of existing machines. In many cases, defects have been entirely remedied, and more perfect and simple machines produced."

Fifteen patents were granted for pneumatic and hydraulic machines. Three patents were for water wheel improvements; one for a turbine consisted in having adjustable orifices of discharge, which, under different heads of water, can be changed without altering the curvature of the buckets. Five patents were granted for pumps, one of which, consisted in having a spiral flange wound round the spindle of a rotary pump in place of the buckets generally used. A spring valve passing through the eduction ports in one of the heads of the casing, divides the pump chamber and cuts off communication betwen the two parts. The spiral flange appears to us to be something like a reproduction of the *screw* pump or spiral bucket wheel. An elastic bucket for a chain pump was also patented; but leather is an elastic substance, and such kinds of buckets are very old; still this bucket has peculiarities belonging to itself. It consists of a hollow spheroid of vulcanized india rubber, with a curved plate of metal attached, in which is the thread of a screw; a spindle passes through the bucket, fitting into this screw, by turning which the bucket is made to expand or contract,—a very excellent device indeed.

Six patents were granted for improvements in saw mills. One was for a new method of feeding the log by the rake and forward motion of the saw. The *ways* in which the saw gate runs are hinged at their top ends; the lower end is turned at right angles, and passes through fender posts; to this part of the *way* some adjustable devices are attached and connected together, so that by varying the angle of one, all are changed at the same time. A system of levers acted upon by the saw gate feed in the log. The fulcrum of one of the levers is movable and connected with the *ways*, so that in changing the inclination of the *ways*, the feed motion is proportionably varied. The patent of Parker for driving saws by a new system of banding, which was illustrated on page 256, Vol. 8, "Scientific American," is favorably noticed. The patent plan of A. M. George, for driving a circular saw without a spindle, illustrated on page 185, same volume, is also noticed.

Four patents were granted for improvements in machinery for making barrels; two were plans for dressing the staves, the third was for cutting the bilge of staves, the fourth for cutting barrel heads, and the fifth for driving the hoops on casks.

Five patents were granted for boring, mortising, and tenoning machines, and one for an expanding *bit*. In one mortising machine the novelty consisted in regulating the length of the vibration of the chisel by a sliding wrist, attached to the chisel and a lever beam. The sliding of this wrist to and from the centre of motion varies the length of stroke.

Five patents were granted for improvements in fences—cast-iron and wire fences; the one illustrated on page 233, Vol. 7, "Sci. Am." is favorably alluded to.

Five patents were granted for various modifications in shingle machines, the main object of all, and a good one, being to make the shingles equal to those formerly made by riving and the hand shaving knife.

Five patents were passed for turning lathes, one being for turning mouldings. The several pieces on which the mouldings are to be turned, are clamped between two heads like the staves of a barrel. These heads are made to rotate on a stationary mandril. A cutter for turning the interior and forming one side of the moulding is suspended from this mandril, and this receives a motion corresponding to the pattern to be turned. In another of these lathes a series of cutters of the form of the pattern to be turned, are secured to a rotating mandrel, and the article to be turned is held in a sliding carriage in such a manner that its axis is parallel to the mandrel, and can be turned and present any number of sides to the action of the cutters. A prismatic figure of any number of sides can be produced in this lathe, the pattern varying longitudinally with the cutters.

No less than twenty patents were granted for planing machines, thus showing that no small amount of ingenuity was excited to supersede a machine—and an excellent one it is—we allude to the Woodworth patent, which has been held with a despotic grasp, and managed, with much indiscretion. Two of these machines were illustrated in our last volume,—that of Norcross, on page 12, and that of Wilder, on page 216. Our readers will find these machines well illustrated and fully described on the pages referred to. A patent was also granted to B. Holly, of Seneca Falls, N. Y., for the improved iron hand plane, illustrated on page 241, Vol. 7. One patent was issued for a machine for manufacturing blinds, which appears to be a good one; the different parts for several blinds are placed in the machine, and after being properly adjusted, the several operations of boring the stiles for receiving the tenons of the slats, the rods and slats pricked for the wires, and the tenons turned on both ends of the slats, are performed repeatedly and simultaneously.

Sixty-three patents were granted for fibrous and textile manufactures and machinery. Four patents were granted for improvements in machinery for making felt hat bats, and for felting. In one machine the bat is hardened on the exhausted cone without being removed; this is effected by placing around the cone a series of conical rollers, to which a shaking and rotary motion is given in order to partially felt the fibres as they are blown upon the "former" cone. In another of these machines, the bat is hardened by placing a cone lined, with vulcanized india rubber over the bat on the "former," and admitting steam or hot water between the outside cone and the bat; a vibratory motion is then given to the cone, which hardens the hat body.

Two patents were obtained for breaking and hackling hemp. Four cordage machines were patented; one was for an improvement in the cans for holding the strands; these are corrugated and punctured with holes for the purpose of preventing the strands from rising by the *cord draught*, and to allow the air to pass out while the can is being packed.

Three patents for carding machinery were obtained—one for colored rovings, whereby a doffer mixes different colored slivers, and forms a variegated roving.

Of three patents issued for paper making machinery, one was for a method of drying the paper by passing it between a series of perforated trunks, through which warm air is blown and comes in contact with both sides of the sheet, thus lifting the moisture and carrying it away,—a good improvement, although not new in principle.

No less than seven patents were granted for sewing machines in 1852. These are important machines, and excite much attention at present; but we must leave a further consideration of this Report until next week.

Our Paper.

Our readers should not forget that in three weeks more we shall distribute between four and five hundred dollars in prizes to the lucky parties, whoever they may be, that have obtained the largest lists of subscribers to the "Scientific American." There will be some then that will be sorry they did not try a little harder, and thus secure one hundred dollars for their own use and profit.

We find that very few indeed, who are induced to subscribe for our paper, are willing to dispense with it afterwards, so that we have good reason from this to believe that it gives almost universal satisfaction. The mechanic, especially, cannot afford to be without it. We were told, a few days since, by one of our subscribers that a short article which appeared in our paper not long since, was worth more than *twenty thousand dollars* to him! Hundreds of our patrons will testify that the information they have received from the "Scientific American" is worth to them enough to pay for twenty copies of the paper for their whole lives. We are every day receiving testimony of this kind.

Those who labor to increase our subscription list can also have the satisfaction of knowing that they will thereby increase the value of their own paper, for we shall constantly, as our subscription increases, expend larger sums of money in adding to its appearance and value.

The clipper ship Shooting Star, Captain Kingman, made the passage from San Francisco to Honolula in 11 days. Upon the arrival the Polynesian issued an extra, headed, "Thirty-seven days from New York, fifty from London," &c., containing the latest news.

PRIZES!! PRIZES!!

The following Splendid Prizes will be given for the largest list of mail subscribers to the Scientific American, sent in by the first of January next:

$100 for the largest list.		$30 for the 7th largest list.	
$75 for the 2d largest list.		$25 for the 8th	ditto
$50 for the 3d	ditto	$20 for the 9th	ditto
$45 for the 4th	ditto	$15 for the 10th	ditto
$40 for the 5th	ditto	$10 for the 11th	ditto
$35 for the 6th	ditto	$5 for the 12th	ditto

The cash will be paid to the order of the successfu competitors immediately after January 1st, 1854.

These prizes are worthy of an honorable and energetic competition, and we hope our readers will not let an opportunity so favorable pass without attention.

☞ For Terms see Prospectus on the last page.

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Irish Linens—Bleaching.—Having briefly alluded to the linen goods of Richardson Sons, & Owden, of Belfast, last week, and having pointed out the great change effected in bleaching by the use of chlorine, we have also to state that much grass bleaching is still practiced in Ireland. The above company have their works at Lisburn, and still conduct the grass bleaching on an extensive scale. It is said that chlorine bleaching injures the ductility of the flax fiber—in common parlance, *burns it*. There can be no doubt but owing to a great amount of carelessness displayed in some bleachworks, this is actually the case, both with cotton and linen fabrics. It is well known to all good housewives that unbleached cotton and linen goods are stronger and more durable than bleached, and that grass bleached factory goods wear much longer than common bleached cloth. In bleaching by chlorine, the green cloth is first boiled in lime water in a vomiting keer for some hours, then it is washed, then subjected for some days to various steepings in chloride of lime liquor and weak sours of sulphuric acid. As it goes through these various chemical manipulations, it should be exposed as little as possible to the atmosphere, for when so exposed, an oxydyzing action takes place in the fibres of the cloth, which greatly injures its ductility; above all, the final washings of bleached goods should be thorough, to remove all the sulphate of lime, or free acid, which otherwise may be left in them, and which we are of opinian is often left in common bleached fabrics. If all cloth—cotton and linen—during the process of chlorine bleaching, were washed in hot water, and plenty of it, its ductility would not suffer so often as by imperfect cold water washings.

To our list of Irish exhibitors of last week, we now add two others; H. Murland, and the "Belfast Flax Spinning Company." This company exposes some beautiful linen shirtings, handkerchiefs, table-cloths, fine yarns, and a variety of flax fabrics. Having stated last week that Belfast, in the north of Ireland, is the seat of the linen manufacture, we cannot better show the importance, and the rise and progress of that manufacture, than by quoting the following from an address recently delivered in Belfast, by T. O'Hagan—Counseller before the Belfast Workingmen's Association:—

"The true statement of the progress of your northern manufacturers wears almost the appearance of an extravagant fable. Your first spinning factory was built within a quarter of a century. In 1839, 15,000 spindles only were at work; in 1850, they had increased to 326,000; and, in 1853, they numbered 506,000, 100,000 having been added in 1852 alone. In 1839 you had one mill—in 1853 you have nearly one hundred. Your Irish spindles are now more numerous than those of England, or of Scotland, or of any Continental State, and they multiply in a continually increasing ratio.—Again, the growth of flax is extending through the whole kingdom, promoted by the successful efforts of enterprizing men, assisted by the invention of new processes, and encouraged by a consumption which craves an unlimited supply. In 1848, we had 53,868 acres under this crop; in 1849, 60,314; in 1850, 91,040; and in 1851 140,536. It is impossible to put any bounds to the advantages that the flax cultivation, rightly prosecuted, may create in such a climate and with such a soil as ours; and Ireland should surely be roused to prosecute it by the cheering fact that already the linen and yarn exports of Belfast alone are equal to those of all France and Belgium, and the half of Germany besides."

This refers only to the linen mill work, not hand spindles, for the hand spinning and hand loom linen trade were established in Ireland at least two centuries ago.

Scotch Linens.—No fine linens are exhibited by any of the Scotch houses, although it is said that most of the linen trade in Ireland is conducted by Scotch companies, or rather that the cities of Belfast and Glasgow are twin sisters. Be that as it may, Richardson & Co. is an old Irish Quaker House, and probably of English origin. J. Normand, of the old town of Kirkaldy, Scotland, exhibits some very excellent table-cloths, towelling, &c., all woven by the power loom. These fabrics do credit to the mill where they were manufactured. John Adamson, of Dundee, exhibits a very excellent variety of coarse linen goods, both green and bleached. Edwards & Co., of the same place, spread out a good assortment of the same kind of goods. Hugh Samson, of the same place, exposes some first rate sail and tow cloth. These, we believe, are all the Scotch linen exhibitors. Dunfermline is the most distinguished place in that country for the manufacture of beautiful table cloths and damask linens, and yet we could not find a single linen article on exhibition from that place. Dundee is famous for making sail cloth and linen yarn; most of the coarse linen cloth which is used for making oil cloth in our factories, some of which is of great width, is manufactured there. A great quantity of sail cloth used in our ships is made in Leith, another Scotch town, and yet no article of cloth from that place is exhibited.—Scotland, although extensively engaged in the linen trade, does not make much of a show.—Fine linen spool thread used to be extensively manufactured in Paisley, by Clark & Co., yet we have not been able to see a single spool on exhibition. This linen thread trade had its origin in that town—it is recorded—by a girl named Christain Shaw, who figured as the malignant accuser of a number of persons for witchcraft, during the very time when the witchcraft mania was so violent in our own New England. Some years ago, while on a visit to Paisley, we were shown a place where a number of those poor unfortunate beings who were accused by this girl, suffered death by burning. This Christian Shaw became an expert at spinning fine linen thread, and originated a business in that place for which it afterwards became distinguished.

Flax Culture.—In saying so much upon the subject of linen manufactures, we have had two objects in view, one to present a clear idea of the quality and quantity of articles exhibited; the other to direct the attention of our people to the importance of the flax culture, for which our country is especially adapted. The demand for flax in Great Britain and Ireland is at present greater than the supply. In 1851 there were no less than 258,415,264 lbs. of flax imported into that country, according to the statement of Prof. Wilson, in his address delivered at Saratoga on the 22nd of last September, before the New York State Agricultural Society.

He said he wished to call particular attention to this; because he found, on inquiry, that although flax enters largely into the cultivation of some of the west and southwestern States, the seed is the only marketable return which the farmer gets, the straw being entirely neglected. Probably some 200,000 to 300,000 acres have been cultivated this year, producing, according to the best estimates he could obtain, between eight and ten bushels of seed per acre; which, judging from the relative yield in Enrope would give about one ton of straw to the acre, or a gross amount of 200,000 to 300,000 tons. These amounts are very small compared with the capabilities of the districts named.—The opinion that flax is an exhausting crop, has done much to retard its culture; science shows it to be erroneous. Experiments made for the purpose of testing this point show that flax exhausts the soil much less than wheat. It has a wide range of soils—sandy loam and alluvial soils being the best suited to its cultivation. All the conditions required for its successful cultivation are, that the soil be deep, in good heart and in good tilth, well drained and free from weeds; if these exist, we may, under ordinary circumstances, expect a good crop.—Owing to the rapid growth of the plant, and the consequent shortness of time it occupies the land, it offers many opportunities to the grower, and admits of more changes in the rotation than most of the other farm crops. Under ordinary circumstances, it is found that the crop succeeds best after corn, or upon recently broken up ground; and that the crop is not generally so remunerative when it follows turnips, potatoes, or other root crops. The large quantity of organic matter usually applied to such crops has a tendency to make the flax grow rank; and although a large crop is frequently obtained, the quality is not so good, and the plant is more likely to sustain injury, both from wind and wet, at the time approaching its maturity."

About two bushels of *cleaned* seed to the acre should be sown broadcast by the hand or by the broadcast drill; it should then be covered in by a pair of fine harrows, and a light roller run over it completes the operation. After being properly got in, the only care it requires is weeding. It is important that this be done in a careful and effective manner, as the value of the crop depends materially upon its cleanness. The harvest operations differ slightly from the usual crops; the proper time is determined by the color of the straw and of the seed. The straw should have assumed a yellow color immediately under the branches, and the seed should, on cutting open the capsule, be of a pale brown color. Flax is always pulled up by the roots. These handsfull are usually laid across each other, and subsequently bound up into small sheaves; these are set up in circular stooks, the butts of each being spread out as much as possible, to allow the air to have free access to them. There they remain until sufficiently dried; they are then either stacked in the field or at the homestead; or the seed is separated at once, and then merely the stem or straw stacked. Many different modes, both of stacking and of separating the seeds exist; probably the cheapest and most efficient is to pass the straw through plain rollers, which crush the capsule, and let the straw pass through uninjured. The seed is separated from the capsule or "boll," by winnowing, and the straw remains to be stacked in the usual way.

Much remains to be done by our country, in fact everything, for the flax manufacture, as our efforts hitherto have been very feeble in that line. There are about 15,000 spindles in operation in our country (in factories we mean), and these, be believe, make nothing finer than shoemakers' thread. excepting about 1000 spindles, which spin a finer yarn. This should not be said of us while we have a country which can raise any quantity of the best flax.

Many attempts have been made to establish the manufacture of fabrics from flax cotton. At Cohoes, in this State, it has been used sparingly mixed with cotton. All the specimens that we have seen of it, had one defect—shortness of staple: this must operate against its use, for short staple is difficult to spin. Improvements, however, may yet be made so as to produce a long staple capable of being spun on cotton machinery; but at present Claussen's process has not been able—as promised—to supersede cotton.

Re-organization in the Crystal Palace.—The Exhibition will be kept open all winter, and excellent arrangements have been made for heating it properly. It is at present one of the most comfortable places imaginable. Room will soon be afforded by Mr. Holmes for the exhibition and display of new articles and machines where the carriages are now placed:—these will be removed to another good and convenient situation, so that novel additions may be made to the display. This should, and no doubt will, attract many new visitors.

An invoice of goods to the value of $150,000 has arrived from Turkey. The Pasha of Egypt has also sent some specimens of goods of Egyptian manufacture, which are quite interesting.

During the winter season it would be an excellent plan to get up excursion parties in the country to come to the Exhibition. For such parties only half price is charged, and we have no doubt but arrangements can be made with the various railroads leading to this city, for obtaining tickets at reduced rates. A visit to the Crystal Palace wonderfully expands the mind and strengthens the understanding.

We shall have something more to say in our next, on the treatment of flax in preparing it for carding and spinning. The subject is one which should attract the attention of our whole people.

Trial of Safes.

It was intended to have a trial of all the "fire safes" on exhibition, by submitting them to the action of fire. Only two, however, were entered for the test; they, it is alleged having been made for the identical purpose, and of little value in themselves, while the others were manufactured at great expense. The two safes tested—Lilly's, and Messrs. Sherwood & Fitzgerald, were placed into a furnace on the first inst., and were kept there until the afternoon of next day—the 2nd, when the firing was stopped and the furnace opened. Lilly's safe with its contents was totally destroyed. Sherwood & Fitzgerald's safe was taken out in good condition—all the books which were contained in it, being in as good order as when put in, excepting the backs of two, which were slightly scorched. Lilly's safe was laid with its door upwards, the other downwards.

(For the Scientific American.)

Trial of Bridges at the Crystal Palace.

A trial somewhat interesting in its character came off on the 29th ult., under the dome of the Crystal Palace, for testing the relative strength of two plans of bridges. The exhibitors are Howe, of Cincinnati, Ohio, and Lanergan, of Boston. The bridges are known as the "Uncle Sam Bridge," and "Lanergan's Truss and Arch Bridge." The span of the models were equal, (14 feet 9 inches between bearings). The Uncle Sam was 14¼ inches deep in the center, and the Lanergan model 25¼ inches. Each model weighed 64¼ lbs. The Lanergan model had been built expressly for this trial.—The proprietor of the Uncle Sam having to load his model with two thousand weight for every one which should be placed on the model of his competitor. A large per centage truly, and if such superiority really exists, Mr. Howe has added a new chapter to the history of civil engineering, and I at least shall be glad to know that his has double the strength of any other plan for framing wooden bridges, which superiority I believe he claims—the span and weight being equal. There was some confusion and irregularity in the manner of testing, which leaves the true result somewhat in doubt. The Uncle Sam was loaded with 2,760 lb., and then the Lanergan Bridge with 2,561 lbs., under which it broke. The weight on the Uncle Sam was then increased to 3,428, when the proprietor withdrew it from further test, to the chagrin of some, who in sporting parlance claimed that the bridge should "die game," or bear double the load of its competitor, and under the protest of the parties who entered the Lanergan Bridge.

It is not in my power here to use my own opinion, or to make comments or suggestions, but a new trial under full and specific rules will be necessary before the public will admit that the Uncle Sam has one hundred per cent. advantage over any other system of bridge building.

J. E. Holmes.

Discovery of a New Cave.

The "Calaveras Chronicle" gives the particulars of the discovery of a curious cave in the vicinity of Vallecito. It appears that a Frenchman was at work there at a considerable depth, and his pick displaced a rock, which laid bare an entrance to a large cave. A party afterwards descended and explored the subterranean apartments. Their report is most astonishing. They report that at the depth of about 100 feet, they came upon a collection of over 300 bodies, perfectly petrified; that the hall contained an immense number of stalactites, some of which rested on and were incorporated with the bodies. Should this rumor prove true, what a glorious subject for antiquarian research.

An Editor Sick.

We notice, by a late number of the Boston "Olive Branch," that the Senior Editor, Rev. T. F. Norris, lies dangerously sick at his residence in Somerville, Mass., and fears are entertained that he will not recover. We regret to learn this, as Mr. Norris has rendered valuable service to the cause of religion and literature during many years of faithful editorial labor. We shall be glad to learn of his recovery. The "Olive Branch," under his charge, assisted by F. W. Rice, and Mrs. Dennison, is deservedly one of the most popular and best conducted papers now published.

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TO CORRESPONDENTS.

T. H., of Pa.—A hollow globe or float is well known as employed inside of a boiler to indicate the hight of the water. The use of a force pump for supplying water to boilers is also common. Barnum's patent is essentially the same in principle as yours.

R. S. M., of Me.—If you secure a patent and another person improves upon it, he cannot use his improvement in connection with yours without liability to you, neither can you make use of his improvement.

J. D. G., of Ill.—An endless chain of moulds for forming brick is not new. The false bottom for allowing the brick to pass out of the mould is not new, we do not think you can claim anything new in the contrivance you describe.

R. H., of Ga.—We are not aware of any such power as an independent centrifugal force. You are certainly mistaken, and we advise you to cease the pursuit of that which has no existence, except in the imagination of some inconsiderate sanguinists.

B. D. S., of Va.—We do not think your method of preventing dust from entering cars by the use of wool can be made to operate, unless the wool can be kept moistened continually with water to collect and retain the dust.

W. T. C., of Mich.—We send all the back numbers except No. 1. Sorry we cannot send it. Your shutter fastener is not patentable. We have seen essentially the same device before.

H. U. S., of N. Y.—Your endorsement of our views on reaping and mowing machines, gratifies us, but we prefer not to publish your letter. We are well acquainted with the practical operation of this class of machines.

J. A. T., of Mass.—We have in our office a model of a substitute for the crank precisely like yours. It is a very ancient device.

F. G. G., of N. Y.—On another page you will find a receipt for instantaneous ink, but you want a jet color:—this you can obtain by boiling a strong infusion of nut galls, or sumac, and logwood together, then adding a little of the sulphate of iron, and using some gum and white sugar to give it a glossy appearance.

T. A. M., of N. J.—A re-action wheel, like Parker's, Caleb Rider's, Jagger & Perry's, or Vandewater's, would answer best where there is much back-water, but no wheel can supply a deficiency of water; if you had no back-water we would advise an over-shot.

W. G. R., of Mass.—We have seen tin roofs put on without soldering, but we do not approve of them; they should all be soldered or sealed up in some manner.

H. W. B., of N. C.—The cost of machines cannot be given in connection with their publication, as a general thing, because they are made of different sizes, and some are more highly finished than others, consequently costing more. Patented machines are sold with reference to the value of the territories in which they are used, therefore the only way in which the prices can be satisfactorily obtained is to address the inventor or manufacturer.

L. F., of Mo.—You had better address S. C. Hills, 12 Platt st, N. Y., machinery agent.

S. M. T., of Miss.—The casting of type in the manner you propose is not new: the same idea has been before suggested and tried.

J. W. S., of Ohio—Your suggestions in regard to feeding paper to a printing press in an endless sheet is very old; it will not do for the "mammoth press."

P. H. W., of N. Y.—Registers for indicating the stopping places of trains of cars have frequently been suggested; there is no patentable novelty in your plan.

T. D., Jr., of Pa.—Your plan for a spirit level is feasible, and for aught we know patentable. You must judge as to its value.

J. R., of Vt.—You can use the lead tubes for evaporating the water in your vats, but will they not trouble you by the crystallization of the copperas upon them?

W. H. E., of N. Y.—The two wires mean a complete circuit, not a double circuit. Your box will save the heat, but what you save of the caloric will be lost in velocity as the exhaust will be retarded. We cannot positively answer you at present about the platina wire.

M. C. G., of Ohio—Steel is blued by the heat to which it is submitted in tempering, not by any liquid, that we know of. We will endeavor to give you the other information soon.

J. G. L., of Iowa—We have received yours, but decline publishing it. We have, since the publication of our article on reapers, received several communications expressing various views regarding it. We still assert that we KNOW what we stated to be the truth, in this part of the world; for the West we cannot vouch; as to the Geneva trial, we will only say that nineteen-twentieths of those there present were astonished when they heard the decision of the judges.

B, H., of N. Y.—The Brooklyn Glass Co., Brooklyn, N. Y., can furnish the glass boxes such as you want.

J. S. D., of Tenn.—We have not the proper time to devote to correspondence not connected with our own business. You had better address Mr. P., stating the business you require of him.

O. P. S., of Ohio—We should not think your machine for hulling grain contained anything patentable. Rice hulling machines, we believe, are in successful operation. The corn sheller is patented.

J. M. W., of Ill.—We will examine your amalgamator at the Crystal Palace with Mr. Holmes, and give him our opinion.

J. T. of Ohio.—It is in vain for you to invent an impossibility—perpetual motion. It is one of the most surprising things in the world to see men troubling their heads with such a chimera in the nineteenth century, but this they do in spite of all we can say to them. You may go on, but no farther than the length of your tether, which happily is not very long.

A. B., of Ct.—After a large fire is started, it is very easy to conceive why a large chimney has a greater draught than a low one, for the pressure of the atmosphere is less at the top, It is certainly a bad plan to build a long flue on the ground behind the boiler before it enters the chimney. The warmer the chimney is at the the top, it draws all the better.

R. McC., of N. Y.—You wish to know what is the power of your water for driving a wheel, and have merely sent us the hight of the fall. Whenever you send us the quantity of water which falls in a second or minute, we will send you the solution of the question.

J. E., of N. J.—You cannot use the patented article you speak of, although you may purchase it in New York, unless you get the consent of the owner of the patent for your county.

G. S., of Ala.—The same plan of pipes as that which you propose is not new. The very same arrangement was illustrated in Vol. 3, Scientific American.

E. A. H., of Ill.—Your plan is certainly original, but a telegraph can be put up and worked at less expense. Our plan, however is to have double tracks; these are the only true remedies for collisions. Use your influence to get all railroads to adopt them.

J. W. B., of N. Y.—You will find what you want about the horse power on another column. The power of a water wheel depends on its construction, but the power of the water is obtained by multiplying the number of pounds which falls in a minute by the height of the fall, and divide by 33,000.

G. W. R., of Ky.—The principle of printing calico to represent patch-work is as old as our earliest remembrance, you can patent any particular design, but nothing more.

S. D. McA., of Tenn.—Your method of drying saw-dust may be good, but the application of steam for the purpose could not be patented.

Money received on account of Patent Office business for the week ending Saturday, Dec. 3:—

J. H. B., of N. Y., $30
J. H., of N. Y., $100;
W. E. B., of, Ala., $10;
B. F., of N. Y., $30;
C. & S., of Mass., $30;
B. & G., Pa., $325;
J. O. of N. Y., $45;
H. E. C., of N. Y., $20:
J. G. (two cases) of N. H., $20;
W. S., Jr., of Pa. $100:
J. A. A., of Va., $25;
D. W. of N. Y., $20:
G. & R., of O., $15:
A. B. D., of N. Y., $55;
B. S., of Ill., $20;
E. S. S., of N. Y., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Dec. 2:—

J. F., of Ky.; E. S. S., of N. Y.; E. G. D., of Ct.; H. S. W. Ohio; J. A. A., of Va.; D. W. of N. Y.

A Chapter of Suggestions, &c

ALL GONE, ALL GONE.—At the commencement of the present volume, we printed 5,000 extra copies, which we concluded would be sufficient for the subsequent demand. It is now but eight weeks since Volume Nine was commenced, and to the disappointment of many we are obliged to announce that the entire editions of two numbers, 1 and 2, are all gone, and that we shall not be able to furnish the back numbers to any parties who order after this date.

MISSING NUMBERS—Mail Subscribers who have failed to receive some of the numbers of Vol. 8, are informed that we are able to supply them with any of the numbers, from 1 to 52, EXCEPT the following, and these we are ENTIRELY out of—Nos. 2, 3, 4, 10, 12, 14, 15, 16 17, 18, 19, 20, 21, 22, 25, 26, 47, 48, 49, 50, 52.

PATENT LAWS, AND GUIDE TO INVENTORS—We publish and have for sale, the Patent Laws of the United States—the pamphlet contains not only the laws but all information touching the rules and regulations of the Patent office. Price 12 1-2 cents per copy.

RECEIPTS—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement: Of Vols. 1, 2, 3, and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1,75. Of Vol. 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7, all; price, in sheets, $2; bound, $2,75. Of Vol. 8, all; price, in sheets, $2; bound, $2,75.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given and often with the name of the post-office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post office at which they wish to receive their paper, and the State in which the post-office is located.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, providing they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engravings executed to suit our own columns in size and style. Barely the expease of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

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IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express, or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

EXCELSIOR!—"MOORE'S RURAL NEW-YORKER," is the leading American Weekly Agricultural, Literary, and Family Newspaper. This is no vain assumption, but fully sustained by its high reputation-great popularity, and extensive circulation. It embraces more agricultural, horticultural, scientific, educational, literary, and news matter, interspersed with numerous appropriate and costly engravings, than any other journal in the Union—rendering it unequalled in variety and usefulness of Contents. An actual increase of nearly seven thousand subscribers during the past year, stimulates and enables us to make the Fifth Volume, for 1854, superior to its predecessors. With a corps of six able editors, and every facility for publishing in the best style, we are determined that the "Rural" shall excel in both contents and appearance. Terms:—$2 a year; $1 for six months—in advance. Great reduction to agents and clubs. Large premiums to agents and those forming clubs. Specimen numbers sent free; give us your address. Subscription money, properly enclosed, at our risk, if addressed to
13 3* D. D. T. MOORE, Rochester, N. Y.

THE SATURDAY EVENING POST—Unrivalled array of talent. The publishers design giving, during the year 1854, the following original novelet, "The Bride of the Wilderness," by Emerson Bennett, author of "Clara Moreland," etc. "The Step-Mother," by Mrs. Mary A. Denison, author of "Home Pictures," etc.;—"Miriam the Avenger; or the Fatal Vow," by Emma D. E.N. Southworth of "The Curse of Clifton," etc. Sketches by Grace Greenwood. A new series of Sketches by Fanny Fern, author of "Fern Leaves," etc." Engravings, Foreign Correspondence, Agricultural articles, News, Congressional Reports, Markets, etc., also shall be regularly given. Terms (cash in advance: Single copy, per annum, $2; 4 copies, $5; 9 copies, $10; 14 copies, $15; 21 copies, $20. Address DEACON & PETERSON, 66 South Third st, Philadelphia. Sample numbers sent gratis when requested. 13 2

STEAM ENGINE AND BOILER—For sale cheap a good second hand horizontal steam engine with locomotive boiler for sale cheap. The engine is 10 horse power, and the boiler of sufficient capacity for a 15 horse engine. The engine and boiler have been in use about one year, and both are in good condition. Address "New England Buckle Co," Waterbury, Conn. 13 2t*

SAVE YOUR FUEL—And have your Engine regulated at the same time. Tremper's Spiral Governor and Steam Economizer can now be furnished to any amount, and of the best materials and manufacture. Orders should be addressed to Newburgh, N. Y., instead of Buffalo, as heretofore, and will be promptly attended to. JOHN TREMPER. 13 5*

THE HOLIDAYS ARE COMING—One of Stearns & Co.'s mammoth Catalogues will be sent, gratis, to any person who may order it. It contains a list of our 2000 books and prints. Address STEARNS & CO., 17 Ann st. N.Y., and it will be forwarded by return of mail. N. B.—Stearns & Co., continue to send books of all kinds by mail, free of postage, as heretofore, to all parts of the United States and the Canadas. 1*

ROBT. GRIFFITHS—Has put up a Railroad Chair Machine, at the Fountain Green Rolling Mill, and it gives full satisfaction as to its capability for doing work well; it is a good machine, and will make from six to seven tons of chairs per day, on a side; by running the whole machine constantly the day through, it will make from 12 to 14 tons of chairs in one day. Address ROBERT GRIFFITHS. Allegheny City, Pa. 13 3*

IRON FOUNDERS' MATERIALS, viz: Pulverized Sea Coal, Black Lead, Soapstone, Anthracite and Charcoal Facings. Also, best imported Fire Bricks, Fire Clay, Fire Sand, and Moulding Sand, for sale by
G. O. ROBERTSON,
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WEIGHING AND PACKING MACHINE—This machine is particularly adapted for the weighing and packing of ground spices, coffee, teas, saleratus, cream tartar, British luster, arrowroot, drugs, prepared flour, farina, starch, cocoa, oat meal, yeast powders, seeds, snuff, ground herbs, or any like material, which may require to be put in packages, from ounces to pounds. Its advantages over the old method of packing by hand, are manifest. One of these machines will, with the aid of one person, weigh accurately, and pack neatly, from 4 to 5,000 packages per day. It requires very little power to run it, and is not liable to get out of repair. Having purchased the exclusive right to manufacture and sell throughout the United States, we are prepared to execute orders for the machines or sale of sectional rights, on reasonable terms. N. B. HARRIS & Co., Proprietors of the Excelsior Steam Spice Mills, Philadelphia, Pa. 12 13

IRON FORGE FOR SALE—Located at Rondout, Ulster Co., N. Y., on tide water, within three hours of New York, by railroad. The machinery consists of one large class double Reverbrating Furnace with necessary tools; one 25 horse-power Steam Engine, and one 1200 lb. Nasmyth Steam Hammers, with ample boiler capacity for both; one Alnden's Blowers, three feet diameter; one set blacksmith's stools. The buildings and machinery are new, of the best description, and in perfect order for immediate operation. The buildings are ample for the shelter of additional furnaces and machinery. The whole is well adapted for a wire mill, axle, or spike factory or any kind of iron works, there being abundant room for extension. The location is at the terminus of the Delaware and Hudson Canal where Lackawana coal can be received direct from canal boats. Apply to CHARLES M. DUPUY, Jr., Rondout, Ulster Co., N. Y. 12 2*

STEAM ENGINES FOR SALE—Four new horizontal high pressure, of 12, 18, 30, and 60 horse power of superior design and workmanship, with boilers complete. Also new Gear Lathes, Iron Planers, and other machinery. Inquire at J. BURNS'S Engineers' and Contractors' Office, 192 Broadway, corner of John street, New York. 12 2*

EUROPEAN PATENTS.—MESSRS. MUNN & CO. pay especial attention to the procuring of Patents in foreign countries, and are prepared to secure patents in all nations where Patent Laws exist. We have our own special agents in the chief European cities; this enables us to communicate directly with Patent Departments, and to save much time and expense to applicants

BRITISH COMMERCIAL LIFE INSURANCE COMPANY—London and America.—Capital $3,000,000. Referees in New York—His Excellency Hamilton Fish, late Governor of the State of New York; Anthony Barclay, Esq., H. B. M. Consul; Stephen Whitney, Esq., James Gallatin, Esq., Samuel Wetmore, Esq., Henry Grinnell, Esq., Hon. Judge Campbell, John Cryder, Esq., J. Phillips Phœnix, Esq., John H. Hicks, Esq. This Company has been in successful operation upwards of thirty years; it offers the following advantages to Insurers:—Low rates on insurances without profits; loans granted on policies; half premium may remain on loan; no extra charge for crossing the Atlantic; California and Australian risks taken. The profits under the Mutual Principle are divided every six years. Bonuses paid in cash; last bonus declared was $34 per cent. LUMLEY FRANKLIN, GEO. M. KNEVITT, Agents, 65 Wall street, New York. 11 4

SCOTT & DRAPER'S PATENT OILER—A cut of which appears in No. 11, present Volume Sci. Am., may be obtained of E. D. & G. DRAPER, Hopedale, Milford, Mass., or of ANDREWS & JESUP, 70 Pine street, New York. 11 4*

STEAM WORKS FOR SALE—Land 40x60 feet; 3 story building, fire-proof boiler house; 10 horse engine and tubular boiler, side planer; cutting, splitting, and upright saws, wood lathes, baluster, fence pale, boring, ship plug and bung machine, &c. &c. All new and in perfect order. Employing 12 men, Subscriber's health has failed him. Price $7,300: on favorable terms, or he would retain an interest. E. A. HILL,
10 5* Decatur st, East Boston, Mass.

UNITED STATES PATENT OFFICE,
Washington, Nov. 12, 1853.

ON THE PETITION of Samuel S. Allen, of Salem, in the County of Salem, and State of New Jersey, formerly of Miamisburg, Ohio, praying for the extension of a patent granted to him on the 15th day of January, 1840, to which improvements were added on the 29th day of March, 1841, for an improvement in Machines for Husking and Shelling Corn, for seven years from the expiration of said patent, which takes place on the 15th day of January, eighteen hundred and fifty-four—

It is ordered that the said petition be heard at the Patent Office on Saturday, the 14th of January next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D C.; Pennsylvania, Philadelphia, Pennsylvania; Evenin Post, and Scientific American, New York; Boston Po Boston, Massachusetts, and Patriot, Concord, New Hampshire; Enquirer, Cincinnati, Ohio, once a week for three successive weeks previous to the fourteenth day of January next.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 11 3

BAKER'S IMPROVED STEAM BOILER FURnace, as used at the Crystal Palace, &c. Apply to J. AMORY, 28 State st, Boston, General Agent. 11 tf

HUDSON MACHINE WORKS and Iron Foundry—at Hudson City, N. Y., are prepared to contract for castings for railroads, bridges, buildings, gas pipes and posts, water pipe, cast-iron ornamental floors, cannon, &c. Steam engines and boilers, high and low pressure, sugar mills, Cornish lifting and forcing pumps for mines, also superior hydraulic pumps and presses, and superior machinists' tools made to order. Especial attention given to the making of patent machines. Orders by mail will receive prompt attention.
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C. B. HUTCHINSON'S PATENT STAVE Cutting Machines—The best in use, and applicable alike to thick and thin staves, for barrels, hogsheads, &c.; also his Head Cutting and Turning, and Stave Jointing and Crozing Machines. This machinery reduces the expense of manufacturing at least fifty per cent. For machines or territorial rights, apply to C. B. HUTCHINSON & CO., Syracuse, N. Y. 2tf

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CHARLES W. COPELAND,
7 13* Consulting Engineer, 64 Broadway.

NICHOLS' PATENT PARAGON SAFETY CANS and Glass Metallic-lined Lamps.—These beautiful glass lamps protect against breakage as well as against explosion. They are infinitely superior to all others. Orders addressed to the N. E. or Sandwich Glass Cos., Boston, Mass., will be promptly answered. 10 10*

THE NEW HAVEN MANUFACTURING CO.—New Haven, Conn., having purchased the entire right of E. Harrison's Flour and Grain Mill, for the United States and Territories, for the term of five years, are now prepared to furnish said mills at short notice. These mills are unequalled by any other mill in use, and will grind from 20 to 30 bushels per hour of fine meal, and will run 24 hours per day, without heating, as the mills are self-cooling. They weigh from 1400 to 1500 lbs., of the best French burr stone, 30 inches in diameter; snugly packed in a cast-iron frame, price of mill $200, packing $5. Terms cash. Further particulars can be had by addressing as above, post-paid, or to S. C. HILLS, agent N. H. M. Co., 12 Platt st., N. Y. 5 tf

NEW HAVEN MANUFACTURING COMPANY—Tool Builders, New Haven, Conn., (successors to Scranton & Parshley) have now on hand $25,000 worth of Machinists' Tools, consisting of power planers, to plane from 5 to 12 feet; slide lathes from 6 to 18 feet long; 3 size hand lathes, with or without shears; counter shafts to fit all sizes and kinds of universal chuck gear cutting engines; drill presses, index plates, bolt cutters, and 3 size slide rests. The Company are also manufacturing steam engines. All of the above tools are of the best quality, and are for sale at 25 per cent. less than any other tools in the market. Cuts and list of prices can be had by addressing as above, post-paid. Warehouse No. 1 Platt st., New York, S. C. HILLS, Agent N. H. Manufacturing Co. 5tf

PLANING, TONGUING, AND GROOVING—BEARDSLEE'S PATENT.—Practical operation of these Machines throughout every portion of the United States, in working all kinds of wood, has proved them to be superior to any and all others. The work they produce cannot be equalled by the hand plane. They work from 100 to 200 feet, lineal measure, per minute. One machine has planed over twenty millions of feet during the last two years, another more than twelve millions of of feet Spruce flooring in ten months. Working models can be seen at the Crystal Palace, where further information can be obtained, or of the patentee at Albany, N. Y
1 tf GEO. W. BEARDSLEE.

A. B. ELY, Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs Munn & Co., Scientific American. 16tf

LEONARD'S MACHINERY DEPOT, 109, Pearl st., and 60 Beeaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinist's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also, a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting. P. A. LEONARD.
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LOGAN, VAIL & CO., No. 9 Gold st., New York.—Agency for Geo. Vail & Co., Speedwell Iron Works, Morristown, N. J., furnish and keep on hand Portable Steam Engines of various sizes, Saw and Grist Mill Irons, Hotchkiss's Water Wheels, Iron Water Wheels of any size, Portable Saw Mills, complete; Bogardus's celebrated Planetary Horse Powers; heaving forgings and castings for steamboats and rolling mills, Ratchet Drills of superior quality for machinists, Saw Gummers, Hand Drills, Tyre Benders, and shafting and machinery generally.
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McALLISTER & BROTHER.—Opticians and dealers in mathematical instruments, 48 Chesnut st., Philadelphia, Pa. Mathematical instruments separate and in cases, Protractors, Spacing Dividers, Drawing Pens, Ivory Scales, Tape Measures, Salometers, Spy Glasses, Microscopes, Hydrometers, &c., &c. An illustrated and priced catalogue will be sent by mail free of charge. 40 6m*

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Scientific Museum.

Gilding---No. 4.

[Concluded from page 96.]

6th.—Another Method to Gild Iron and Steel.—Pour cautiously into a vessel containing gold dissolved in nitro-muriatic acid, about twice its volume of sulphuric ether, and then shake the liquids well together, and set aside the bottle to rest. In a short time the ether will separate by itself and float on the surface. The acid becomes more transparent, and the ether darker in color than it was before, because it takes up the gold. The whole mixture is then poured into a glass funnel, the lower aperture of which is small, and which aperture must not be opened till the ether and acid have completely separated from one another. It is then opened and the heavy nitro-muriatic acid is run off, leaving the ether gold solution, which is placed into a well stoppered bottle and kept for use. The iron or steel to be gilded is first polished with the finest emery or *crocus* and brandy. The gold ether is then applied with a fine brush by painting it on the sword or other steel article. The ether soon evaporates, and the gold remains on the surface of the article, which is then put into the fire and heated, and afterwards taken out and burnished.—By this process all kinds of golden figures may be delineated with a fine brush, on sabres, &c.

If silver is polished bright, and its surface perfectly freed from grease, the same ether solution applied in the same way, it is said, will gild it.

Gilding is quite a different art from *plating*, and simply means covering articles with a thin skin of gold. Mercury in fire gilding performs the office of a uniter or *biter*, for the gold, with the other metal to which it is applied. Quicksilver being volatile, and gold the reverse, heat expels the one, while the other is left in the pores of the metal; it is carried in by the mercury, which possesses the quality of flowing through the pores of metals, as water and oil flow through the pores of lamp wick. The experiments of Prof. Horsford, of Cambridge, Mass., on the permeability of metals by mercury, which have been published in a pamphlet, are very interesting, and affords a solution of the use of mercury as an amalgam for gilding. The use of quicksilver in gilding is very unhealthy, its fumes are dangerous, consequently great care must be exercised in conducting such fumes into a proper receptacle, and preventing them from mixing with the atmosphere of the workshop.

7th.—Leaf gilding is performed on paper, vellum, or metals, by covering them with a coat of isinglass dissolved in water, then putting on gold or silver leaf before the liquid is *quite* dry, after which the surface is burnished with an agate burnisher; gum water or size may be used as well as isinglass.

Gold ink is made by grinding upon a porphyry slab, with a muller, gold and honey, until they are reduced to the finest possible state of division. The gold paste is then collected upon the edge of a knife and put into a glass vessel—a tumbler—containing water. The honey soon diffuses through the water when stirred, and the gold by its superior gravity falls to the bottom, and must be decanted off. Repeated washings removes the honey, and leaves a very fine gold powder, which, when dried, is very brilliant, and makes gold ink by simply mixing it with a little gum water. When the writing becomes dry, it must be burnished with a burnisher. The grinding of gold leaf is a very nice operation. If, after it has been reduced to powder, the least blow is struck upon the muller, the gold is at once resolved into a solid piece under the blow.

California Coal.

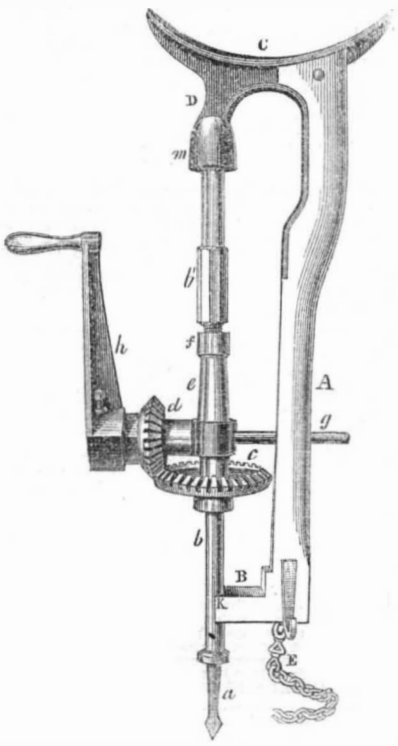
The "Sacramento Union" describes some specimens of coal taken from the foot-hills of the Sierra, in Butte county, about 40 miles above Maysville:

"In external appearance it much resembled the more bituminous varieties of coal, breaking with a shining fracture; but as this coal was taken from near the surface, it could not be considered as a fair sample, and we have no doubt that more favorable specimens will be found. It was comparatively light, the specific gravity certainly not being so high as that of ordinary bituminous coal.

The vein in which it occurs is about six feet thick, cropping out with a dip of about 45°: but at some distance in the hill, where a shaft of twenty-nine feet has been sunken, to intercept the vein, it is found nearly horizontal. It burns with a clear, bright flame, but appears not to have much strength."

Improved Hand Drill.

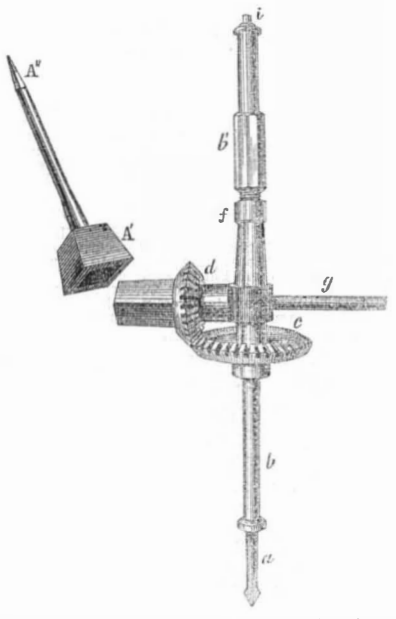
Fig. 1.



The engravings herewith presented are illustrations of Reuben Daniels' improved Hand drill, for which a patent was granted Sept. 21, 1852.

The bit, *a*, is fitted into a socket in the mandrel, *b*, so that it may be removed. This mandrel is made in two parts, *b* and *b'*, the one screwing into the other, so that it can be lengthened at pleasure. Upon this mandrel a bevel wheel, *c*, gears into another, *d*, mounted on a pivot projecting from a sleeve, *e*, placed upon the mandrel, and held between the wheel, *c*, and a collar, *f*; on the side of the sleeve opposite the wheel, *d*, an arm, *g*, projects, which may be held by the attendant to steady the drill. The wheel, *d*, is fitted with a crank, *h*. The extremity of the part, *b'*, of the mandrel is fitted with a point of hardened steel, *i*, where it sets into the stock at *m*.

Fig. 2.



The stock upon which the mandrel and gearing are mounted, consists of a bar, A, a bracket, B, with a concave rest, K, to support the mandrel, and a crutch, C, on the under side of which is the bucket, D, having in it a cylindrical aperture, *m*, in which is a step of hardened steel to receive the pivoted end of the mandrel. On the lower end of the bucket, B, is a stirrup into which is fastened the chain, E. This chain is to be fastened around the article to be drilled, when it is practicable, in order to keep the drill steady. As the hole deepens, the mandrel is elongated by turning the part *b'*. A' and A'', in fig. 2, is an extension arm to be fitted on the end of the shaft, in order to enable it to be turned at a distance as when the drill is placed inside a boiler, and it is desirable to turn it from the outside.

For further information address the inventor, Woodstock, Vt., or S. C. Hills, New York City.

To Cure the Grape Disease.

Dr. A. P. Price, of England, read a paper before the last meeting of the British Association for the Advancement of Science, on the disease of the grape, which has destroyed the vine in the Island of Madeira, and has greatly injured the vine crops of France, Germany, and Portugal. In three vineries in England, the disease had appeared for five successive years, and no remedy was found for it; flowers of sulphur and various other things were experimented with in vain. At last, he (Dr. Price) was induced to employ a solution of penta-sulphide of lime, a diluted solution of which he found to act in no way injuriously to the young and delicate shoots of several plants. A few applications of this solution were applied to the stems and branches of the diseased vines, and they soon became coated with a protective deposit of sulphur, when the disease gradually disappeared, and the vines became perfectly healthy, and have continued so for two years, although growing contiguous to diseased vineries, where the vines have not been treated in the same manner. The way to make the solution of penta-sulphide of lime, is as follows. Boil 30 parts (by weight) of caustic lime with 80 parts of the flowers of sulphur in a sufficiently quantity of water; the boiling is kept up until the solution has acquired a dark red color, and the excess of sulphur ceases to dissolve. The clear of the solution (when cold) is then drawn off, and after being diluted with twenty times its volume of water, it may be applied to the vines with a brush or a sponge. This information, we are confident, will be of great value to all our people.

Health and Oil.

"I noticed some time since a paragraph in the Scientific American that workmen in woolen factories are generally healthy, owing to the oil used upon the wool. A young man of my acquaintance was in poor health two years since, at which time he began working in a manufactory of printer's ink, when his health began to improve, and he is now in better health than at any former period. He attributes the improvement to the fumes of the boiling oil used in the manufacture of the ink."

Wm. G. R.

Andover, Mass.

[Dr. Davy, Inspector General of Army Hospitals in Britain, read a paper a few months ago, before the Royal Society of Edinburgh, which has a relative bearing on this subject. We do not know what kind of oil may have been been used in the factories to which our correspondent has alluded, nor the kind used in making the printer's ink spoken of, but the beneficial effects of cod liver oil in cases of consumption have been well established, and we presume will not be disputed. The paper of Dr. Davy embraced an enquiry into the nutritive properties of fish. He found the common mackerel having a specific gravity of 1043, to contain 37·9 per cent. of solid matter, while sirloin beef of the specific gravity of 1078 contained only 26·9 per cent. of solid matter. Common cod with a specific gravity of 1059, contained 19·2 per cent of solid matter. Mutton with a specific gravity of 1068, contained 26 5 of solid matter. Salmon contained more solid matter than beef, mutton, veal, or common fowls. The mackerel was found to abound in oil, no less than 15·52 per cent, being obtained by pressure between the folds of blotting paper. He therefore considers that there is not much difference between the nutritive power of fish and flesh. As it regards the healthfulness of a fish diet, he speaks in terms of praise. He considers fish easy of digestion, especially the cod which has little oil interspersed through its muscular tissue, and even those like the mackerel which have much oil so interfused, he considers to be superior food on many accounts. From information which he had been able to collect, he was disposed to think that fishermen and their families living principally on fish, were healthy above the common average. At the public dispensary of Plymouth, England—a seaport, where there are many fishermen, out of 654 cases of confirmed phythisis, and hemoptysis, only four belonged to fishermen's families (one male and three females.) Dr. Cookworthy, the able physician of that institution, asserts that scrofula and tubercular consumption, are very rarely to be found among the families of those whose diet consists in a great measure of fish. Dr. Davy attributes this exemption in fishermen's families from peculiar diseases, to the presence of *iodine*, distinct traces of which he has found in all salt water fish. He had found it in the herring, mackerel, cod, sole, smelt, salmon, sea trout, shrimp, lobster, &c. In fresh water fish he had found no traces of this element. The medicinal effects of cod liver oil he attributes to iodine, and it may be that this is the very substance which exerts the salutary influence spoken of, in woolen and printer's ink factories, as all oil obtained from seal, or sea fish of any description, no doubt contains iodine.

During the past two months, many of the ships which have arrived in this city with foreign emigrants were no better than floating hospitals, forty, fifty, and in one case one hundred died on the passage The disease has ceased whenever the ship reached our shores.

LITERARY NOTICES.

Moore's Rural New Yorker—We have always admired the ability and practical character of this journal of agriculture, science, and family miscellany. We regard it as one of the best in its branch, and can safely recommend it to agriculturists as one of the best publications of the day. It is edited by several practical writers in their several departments, and is altogether a well managed paper.

An Oration—We are indebted to E. J. Alvord, of Southport, Ct., for a pamphlet containing an account of the Centennial Anniversary celebration of the Lionian Society of Yale College; the oration of Wm. M. Evarts, Esq., and the poem of Francis M. Finch, on the occasion—are both fine literary productions. The addresses at the banquet are all felicitous and interesting.

Book Catalogue—Messrs. Stearns & Co. advertise in another column a very excellent catalogue of their books, with the prices annexed, (which they are circulating gratuitously.) It is really worth procuring.

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